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EDITORIAL

THE SICKLE-CELL TRAIT

In an article published in this issue (p. 109) Drs. Budtz-Olsen and Burgers report that they have been unable to find the sickle-cell trait in any of 89 Natives from the Ciskei. The sickle-cell trait is an inherited abnormality of haemoglobin formation, by virtue of which the red blood-cells, when their haemoglobin is in the deoxygenated state, lose their round shape and assume peculiar forms resembling sickles, crescents or holly-wreaths. Bearers of the trait, which is inherited as a Mendelian dominant character, have no symptoms, and their sickle-cells can only be demonstrated by artificially reducing the haemoglobin. Those sicklers who receive a sickling gene from each of their parents may suffer from a haemolytic disorder, sickle-cell anaemia, in which sickle-cells appear spontaneously in the peripheral blood.

Sickle-cell anaemia is of course a clinical problem, but it is excessively rare in South Africa. The distribution of the harmless sickle-cell trait, however, is of great anthropological interest. Sickling was first discovered in American negroes,[1] but it soon became obvious that they had received it from Africa by way of the slave trade. In West African negroes, who were the ancestors of the American negroes, the proportion of trait-bearers is about 12% of the population.[2] Numerous surveys have now been made in other parts of Africa.[3] The distribution of sickling is remarkably patchy, but on the whole it is highest in East and Central Africa, where frequencies of up to 45% have been found.[4] The incidence remains high on the way south until the Zambesi River is reached, when it falls abruptly to figures nowhere exceeding 3% in Rhodesia,[5] southern Portuguese East Africa [5, 6] and the Union of South Africa.[7] In fact in the Union no confirmed figure of over 1% has been obtained.

The sickle-cell trait thus seemed for a time to be of African origin. But the discovery of sickle-cells in Indian aboriginal tribes,[8] whose Rh groups showed

VAN DIE REDAKSIE

DIE SEKELSEL-EIENSKAP

In 'n artikel wat in hierdie uitgawe (bl. 109) verskyn deel drs. Budtz-Olsen en Burgers mee dat hulle by geeneen van 89 Ciskei-naturelle sekelselle kon vind nie. Die sekelsel is 'n oorgeërfde abnormaliteit van die hemoglobienformasie waarvolgens die rooibloedliggaampies, tydens die suurstoflose stadium van die hemoglobien, hul ronde fatsoen verloor en eienaardige vorms aanneem wat na sekels, halfmane of hulskransies lyk. Persone wat hierdie dominante Mendeliaanse eienskap oorerf, toon geen simptome nie en die aanwesigheid van sekelselle kan alleenlik gedemonstreer word, deur die hemoglobien kunsmatig te verminder. Persone wat van elkeen van hul ouers die sekelsel-geen ontvang, mag aan 'n hemolitiese ongesteldheid, sekelsel-anemie, ly, as gevolg waarvan sekelselle spontaan in die perifeerbloed verskyn.

Sekelsel-anemie is natuurlik 'n kliniese probleem en dit kom uiters selde in Suid-Afrika voor. Die verspreiding van hierdie skadelose sekelsel-eienskap is egter van groot antropologiese belang. Dit was vir die eerste keer by Amerikaanse negers ontdek,[1] maar heel gou het dit duidelik geword dat dit van Afrika afkomstig is en wel langs die pad van die slawehandel. Dit word by omtrent 12% van die negers in Wes-Afrika (die voorsate van die Amerikaanse negers) gevind.[2]

Talle opnames is nou in ander dele van Afrika gemaak.[3] Die verspreiding is besonder kolagtig maar oor die algemeen word dit hoofsaaklik in Oos- en Sentraal-Afrika aangetref waar die voorvalsyfer somtyds so hoog soos 45% is.[4] In die suide bly die voorvalsyfer hoog tot aan die Sambesie-rivier wanneer dit skielik daal en nooit hoër as 3% in Rhodesië,[5] suidelike Portugees-Oos-Afrika [5, 6] en die Unie van Suid-Afrika is nie.[7] Inderdaad kon geen bevestiging gevind word nie vir 'n syfer wat hoër as 1% vir die Unie is.

Dus het dit vir 'n tyd lank voorgekom dat hierdie eienskap in Afrika sy oorsprong het. Maar hierdie teorie is omvergewerp toe sekelselle by inboorlingstamme in Indië ontdek is [8] want hierdie stamme se Rh-groepe het duidelik bewys dat geen swart rasse in Afrika onder hul voorsate getel kon word nie. Lehmann[9] gee aan die hand dat die sekelsel betreklik kort gelede

clearly that they had no black African ancestry, upset this theory. Lehmann [9] has suggested that the sickle-cell was brought comparatively recently by land from India to Africa by Veddian peoples of the type of the Indian aborigines, colonies of whom are still to be found in Persia and South Arabia. He thinks that the gene was introduced into what is now Somaliland and has spread west and southwards after the establishment of the black races in Africa. It has also been pointed out [10, 11] that the distribution of sickling in Africa is very similar to that of the shorthorn zebu cow, an Indian breed known to have been introduced, probably in the Christian era, along the route postulated by Lehmann for the introduction of the sickle-cell. Both sickle-cells and shorthorn zebus are virtually absent south of the Zambesi, but both are found in Madagascar.[11] If the human migration that brought the sickle-cell trait, and perhaps the zebu as well, never penetrated south of the Zambesi River, and if the present tribes were already in position there at the time of the migration, we could account for the rarity of sickling in tribes in the territories south of the river.

The similarity between the distribution of the sickle-cell and that of the shorthorn zebu may of course be merely due to coincidence. Allison [12, 13] has offered another explanation of sickle-cell distribution in Africa, which has experimental support although other observers disagree with his views. Several workers had suggested that the possession of the sickle-cell trait might protect against malarial infection, but Allison was the first to bring forward reasonably convincing statistics. He exposed sickling and non-sickling volunteers to infection with *Plasmodium falciparum* and found that the sicklers were considerably more resistant to infection than the normal subjects. We have thus a mechanism which would favour the reproduction of sicklers in malarial districts, and there is little doubt that we see it at work in Central Africa. Whether this alone would account for the rarity of sickling south of the Zambesi River is uncertain, since many parts of Southern Africa are highly malarious and might have been expected to act as culture media for sicklers if a reasonably large inoculum of trait-bearers had ever reached them. This problem needs further investigation; the migration theory may give the answer. On the other hand, factors may perhaps be at work of which we as yet know nothing.

1. Herrick, J. B. (1910): Arch. Intern. Med., **6,** 517.
2. Findlay, G. M., Robertson, W. M. and Zacharias, F. J. (1946): Trans. Roy. Soc. Trop. Med. Hyg., **40,** 83.
3. Annotation, with map (1952): S. Afr. Med. J., **26,** 237.
4. Lehmann, H. and Raper, A. B. (1949): Nature, **164,** 494.
5. Mourant, A. E. (1954): *The Distribution of the Human Blood Groups.* Oxford: Blackwell Scientific Publications.
6. Foy, H., Kondi, A., Rebello, A. and Martins, F. (1952): E. Afr. Med. J., **7,** 247.
7. Budtz-Olsen, O. E. and Burgers, A. C. J. (1955): S. Afr. Med. J., **29,** 109 (this issue).
8. Lehmann, H. and Cutbush, M. (1952): Brit. Med. J., **1,** 404.
9. Lehmann, H. (1953): Man, article 5.
10. Brain, P. (1953): *Ibid.*, article 233.
11. *Idem* (1954): Paper read at 5th International Congress of Blood Transfusion, Paris.
12. Allison, A. C. (1954): Brit. Med. J., **1,** 290.
13. *Idem* (1954): Trans. Roy. Soc. Trop. Med. Hyg., **48,** 312.

deur Veddiaanse Indiërs—van die Indiër-inboorlingtipe—oorland na Afrika gebring is. Nedersettings van hierdie Indiërs word nog vandag in Persië en Suid-Arabië gevind. Hy is die mening toegedaan dat die geen eers die streek bereik het wat vandag as Somaliland bekendstaan en dat dit weswaarts en suidwaarts versprei het nadat die swart rasse alreeds in Afrika gevestig is. Die verspreiding van die sekelsel toon ook heelwat ooreenkoms met die verspreiding van die korthoring zebu-koei.[10, 11] Dit is bekend dat die zebu-koei, 'n ras wat uit Indië afkomstig is, waarskynlik in die tydperk na Christus, Afrika bereik het langs die weg wat Lehmann vir die sekelsel postuleer. Beide die sekelsel en die korthoring zebu word feitlik nooit suid van die Sambesie gevind nie, maar albei kom in Madagaskar voor.[11] As die verhuising, waarby die sekelsel-eienskap en moontlik ook die zebu betrokke was, nooit verder suid as die Sambesie-rivier gevorder het nie, en as die huidige rasse alreeds ten tyde van hierdie trek daar gevestig was, dan is dit verstaanbaar waarom die sekelsel feitlik nooit by die rasse gevind word nie wat suid van die rivier woon.

Die ooreenkoms tussen die verspreiding van die sekelsel en dié van die korthoring zebu mag natuurlik blote toeval wees. Allison [12, 13] gee 'n ander uitleg van die sekelselverspreiding in Afrika aan wat proefondervindelik gesteun word maar waarmee ander navorsers nie saamstem nie. Verskeie wetenskaplikes het al die gedagte ge-opper dat die besit van die sekelsel-eienskap 'n beskerming teen malaria bied maar Allison was die eerste om redelik oortuigende statistiek voor te lê. Hy het vrywilligers met en vrywilligers sonder sekelselle aan infeksie met *Plasmodium falciparum* blootgestel en gevind dat diegene met sekelselle heelwat sterker weerstand teen die infeksie kon bied as diegene sonder sekelselle. Ons sien dus hoedat die voortplanting van mense met sekelselle in malaria-streke begunstig kan word en dit is wat werklik in Sentraal-Afrika gebeur. Of dit 'n voldoende verklaring is waarom sekelselle so selde suid van die Sambesie-rivier voorkom is probleemagtig aangesien malaria in baie dele van Suidelike Afrika kwaai woed en as kultuurmedia vir sekelselle kon gedien het as 'n redelike aantal draers met sekelselle die streke bereik het. Hierdie vraagstuk verdien verdere ondersoek; die verhuisingsteorie mag 'n oplossing bied, maar faktore wat nog aan ons onbekend is, mag daarvoor verantwoordelik wees.

1. Herrick, J. B. (1910): Arch. Intern. Med., **6,** 517.
2. Findlay, G. M., Robertson, W. M. en Zacharias, F. J. (1946): Trans. Roy. Soc. Trop. Med. Hyg., **40,** 83.
3. Aantekening, met kaart (1952): S.-Afr. T. Geneesk., **26,** 237.
4. Lehmann, H. en Raper, A. B. (1949): Nature, **164,** 494.
5. Mourant, A. E. (1954): *The Distribution of the Human Blood Groups.* Oxford: Blackwell Scientific Publications.
6. Foy, H., Kondi, A., Rebello, A. en Martins, F. (1952): E. Afr. Med. J., **7,** 247.
7. Budtz-Olsen, O. F. en Burgers, A. C. J. (1955): S.-Afr. T. Geneesk., **29,** 109 (hierdie uitgawe).
8. Lehmann, H. en Cutbush, M. (1952): Brit. Med. J., **1,** 404.
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11. *Idem* (1954): Verhandeling wat voorgelees is by die 5de Internasionale Kongres van Bloedoortapping, Parys.
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MALIGNANT DISEASE IN THE TRANSVAAL *

II. TUMOURS OF THE MUSCULO-SKELETAL SYSTEM
III. CANCER OF THE RESPIRATORY TRACT

FIRST STATISTICAL REPORT OF THE RADIATION THERAPY DEPARTMENT OF THE JOHANNESBURG GROUP OF HOSPITALS

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II. SARCOMATA OF BONE AND CONNECTIVE TISSUE

In a general survey of the relative number of malignant tumours affecting various anatomical systems,[1] lesions of the musculo-skeletal system constituted 2·7% of all cancer cases referred for radiotherapy. Of the total of 72 cases seen, 12 proved to be metastatic bone cancer of undetermined primary origin, leaving 60 cases with sarcoma of bone or connective tissue available for analysis. Sarcomata histologically diagnosed as neurogenic or of nerve-sheath origin will be described later under tumours of the nervous system, and have consequently been excluded from this series. Relatively few connective-tissue sarcomata reach the radiotherapy department, since the majority of cases are more amenable to surgical treatment; our figures are therefore but a crude approximation to the true relative incidence. The distribution of cases according to race and sex is shown in Table I.

TABLE I. NEOPLASM OF BONE AND CONNECTIVE TISSUE, BY RACE AND SEX

Race	*Males*	*Females*	*Total (All cases)*	*Total (Sarcomata)*
European	19	26	45	36
Bantu ..	16	11	27	24
Total ..	35	37	72	60

The *sex incidence* was virtually equal, the slight deviations in the two racial groups being statistically insignificant.

Age Distribution. The average age in the Bantu group was 27 years, as compared with 48 years in the Europeans.

Pathology. Excluding metastatic bone cancer, there were 8 categories, based on differences in the histological diagnosis, as shown in Table II, all but 10 of the 60 cases having a conclusive biopsy report, for which we are indebted to the pathologists of the South African Institute for Medical Research.

TABLE II. SARCOMA OF BONE AND CONNECTIVE TISSUE, ACCORDING TO HISTOLOGICAL DIAGNOSIS

Types	*European*	*Bantu*	*Total*
Fibro-sarcoma	13	8	21
Myxo-sarcoma	2	6	8
Lipo-sarcoma	3	2	5
Myo-sarcoma	2	0	2
Spindle-celled sarcoma ..	0	2	2
Osteogenic sarcoma	2	2	4
Chondro-sarcoma	1	2	3
Ewing's tumour	3	2	5
No biopsy obtained	10	0	10

Stage, Treatment and Results. Since there were few differences in staging, management and over-all long-term survival between the 2 racial groups, the combined data will be given in terms of percentages. In 81% of cases the disease, though often locally advanced, was confined to the site of origin, and in 19% there were regional or distant metastases. Radical surgery had been attempted before irradiation in 38% of cases, radical radiotherapy as the sole treatment was given in 33%, and the remaining 29% had palliative treatment only. The relatively large number of cases receiving radical radiotherapy only, is due to the fact that the Bantu generally refuse radical amputations.

Of the cases treated before 1951 and followed for at least 2 years, 33% were alive and apparently free from tumour, 11% were known to be alive with actively growing tumour, and 56% were known to have died of the disease.

Special Features in the Bantu

Although on the whole sarcomata produce the same clinical and radiological features in the Bantu as in the European, certain minor differences particularly with regard to anatomical distribution and response to radiation therapy were noted and are thus worthy of record.

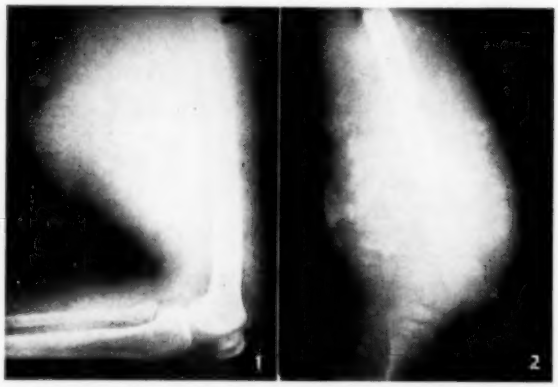
Relative Frequency. Whereas tumours in the Bantu constituted 22% of all malignant cases seen,[1] in the group of connective-tissue tumours 40% occurred in this racial group. In an earlier analysis [2] of 4,000 cases of malignancy seen over the 3-year period 1947-1949 it was noted that 8% of European malignancies were sarcomata whereas in the Bantu the figure was 23%.

De Ligneris in 1927 [3] reported 81 malignant tumours, the majority of which were sarcomatous in nature, and unpublished figures obtained in Swaziland between 1935 and 1940 showed that in this territory sarcomata were more than twice as frequent as carcinomata. The latter figures are unreliable owing to the fact that mainly young women and children attended these regional hospitals, the older generation remaining true to tribal customs and receiving treatment from their own 'doctors'. Despite these reservations, one can generalize from the statistics available that the Bantu has a relative predilec-

* Article I of this series was published in the *Journal* (1952), vol. **26**, p. 932.

tion for connective-tissue tumour formation, and this small series tends to confirm this view.

Clinical Features. Although histologically only 4 of the 24 Bantu cases originated in bone or cartilage, 16 cases were clinically 'bone' tumours and only 8 were situated in the soft tissues. The lower limb was involved 3 times as frequently as the upper limb.



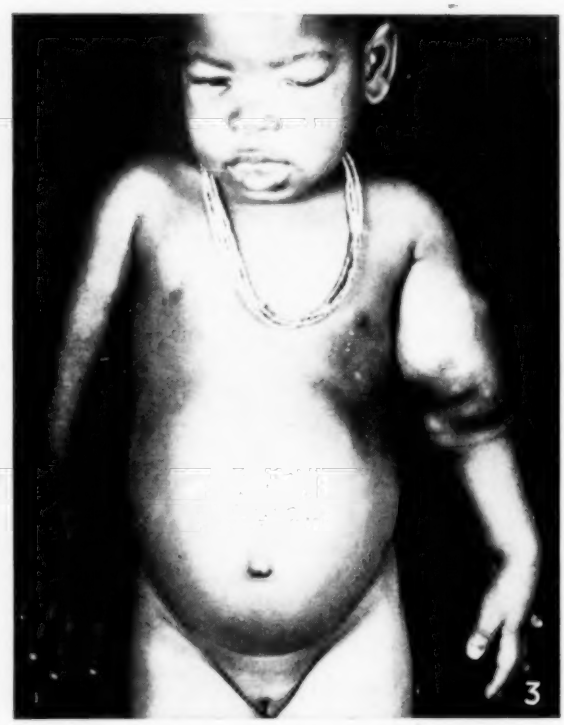


Fig. 1. X-ray of a lipo-sarcoma of the thigh with a circumference of 105 cm.

Fig. 2. X-ray of an osteogenic sarcoma of the femur with a circumference of 95 cm.

Fig. 3. Lipo-sarcoma of arm in a child aged 4, with no pain and very little disability.

As with all malignant tumours in this clinic, particularly in African patients, a feature of this series was the advanced stage in which the patients presented themselves for treatment. A lipo-sarcoma of the thigh in an adult female had a circumference of 105 cm. with minimal ulceration of the skin and no involvement of the femur (Fig. 1). An osteogenic sarcoma of the femur in an adult male had a circumference of 95 cm. with no skin ulceration and relatively little pain or disability (Fig. 2). A child aged 4 years with an advanced lipo-sarcoma of the arm complained of no pain and had relatively little disability (Fig. 3).

Of 15 cases with visible tumour at the time of treatment, no change was noted in 6, 2 died while in hospital, 2 developed metastases while under treatment and 'good' results were obtained in 5 cases, 2 of which were Ewing's tumours.

III. CANCER OF THE RESPIRATORY TRACT

Cancer of the respiratory system constituted 6.9% of all cases of malignant disease referred for treatment between 1949 and 1951.[1] The over-all incidence of respiratory tumours, relative to all cases referred, was virtually the same in Europeans and Africans. The cases now under review, including those presenting during 1952, total 177, of which 140 are European and 37 African. A small number of Indian and Coloured patients have been excluded from this series, since they belong to neither of the two main groups and are too few to constitute a demographically distinct category. We have divided the respiratory system into 4 anatomical sites, which will be separately considered.

TABLE III. RESPIRATORY TRACT CANCER ACCORDING TO SITE, BY RACE AND SEX

Anatomical Site	*European Cases* Male	Female	%	*Bantu Cases* Male	Female	%	*Totals*
Paranasal sinuses	4	3	5	22	5	73	34
Nasopharynx ..	10	4	10	2	1	8	17
Larynx	23	2	18	4	0	11	29
Lungs	80	14	67	3	0	8	97
Total Cases ..	117	23	100	31	6	100	177
Sex ratio (%) ..	84	16		84	16		

The incidence of lung cancer is relatively high and tumours of the sinuses comparatively rare in the European, while in the African, conversely, there is a remarkably high incidence of cancer of the maxillary antrum and lung cancer is relatively rare.

Sex Ratio. In both racial groups males constitute 84% of all cases; in laryngeal cancer all but two of the 29 cases were in males, confirming the generally reported rarity of the condition in women.

Age Distribution. The frequency of respiratory malignant disease, by decades, is shown in the histograms of Fig. 4. Europeans are most susceptible during the 6th and 7th decades, the average age being 59 years, while in the Bantu the disease generally appears about a decade earlier.

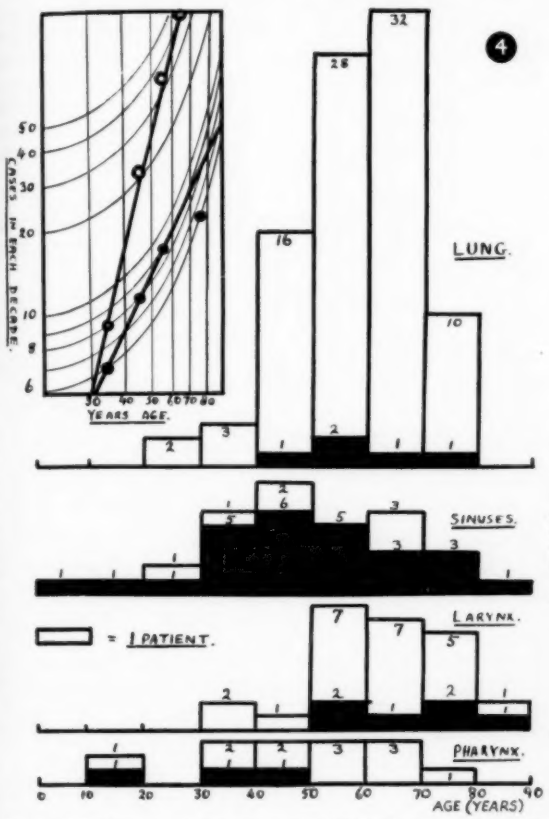


Fig. 4. Histograms illustrating age distribution of cancer of the respiratory tract in 4 distinct anatomical sites. White columns represent European cases; black areas African.

Inset shows age-specific prevalence of respiratory cancer (white circles European, black circles African). The logarithmic co-ordinates have been distorted to match the South African age-distribution.

TUMOURS OF THE PARANASAL SINUSES

These tumours account for almost three-quarters of respiratory-tract malignancy in the African, but only 5% of the corresponding group in Europeans. The average age of these patients was 52 years, and 77% of cases were males. The maxillary antrum was the most frequent site of origin, 28 of the 34 cases having originally arisen in this area, although at the time of examination the disease was often so advanced, with ulceration of the palate and invasion of the orbit, nasal fossa and ethmoid region, that the exact site of origin was obscured. Four cases started in the ethmoid cells, and one was thought to arise in the sphenoidal sinus. In all but 6 patients a definite histological report was obtained, and of these 85% (24 cases) were squamous epitheliomata, 11% (3 cases) were sarcomata and one case was diagnosed as 'schneiderian carcinoma'. Of the sarcomata, 1 was radio-resistant and hence probably of connective-tissue origin, and the remaining 2 were extremely radio-sensitive lesions apparently reticulo-endothelial in origin. The epitheliomata were, in general, well-differentiated squamous-celled carcinomata. In only one patient could the disease be classified as 'early', the remainder being locally advanced.

In spite of the advanced stage of the local lesion, however, lymphatic spread and distant metastases appeared to be an unusual and late manifestation of the disease, so that only 9 cases were considered incurable when first seen and given only palliative treatment. Of the remainder, 23 were subjected to radical radiotherapy as the sole method of treatment, as a rule this consisted of the insertion of a radium source delivering between 6,000 and 8,000 r over a period of 7-14 days, to a spherical mass of tissue bounded by the palate, nasal cavity, cheek and orbit (Paterson's method.[4]) Two patients were subjected to surgical resection of the palate before irradiation. Survival rates are inevitably poor in view of the advanced stage of the disease when first seen.

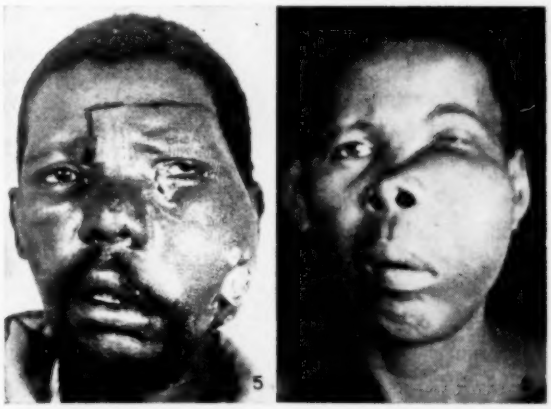


Fig. 5. Advanced carcinoma of the antrum, involving orbit, nose, mouth and soft tissues, with no malignant glandular involvement.

Fig. 6. Advanced carcinoma of the antrum without glandular involvement.

Of 13 cases followed for 2 years or more, 10 patients (77%) were known to have died of the disease, 1 was alive with persistent tumour in the primary site, and only 2 were apparently cured. Death usually followed local complications such as infection or necrosis, with residual tumour but without distant metastases. Typical examples of advanced antral lesions are shown in Figs. 6 and 7.

CANCER OF THE NASOPHARYNX

Incidence. Seventeen cases of cancer of the nasopharynx were seen during the period under review, 14 occurring in Europeans and 3 in non-Europeans. These tumours form between 0.5 and 1% of all malignant cases seen in cancer centres, and are most commonly found in patients between the ages of 40 and 45 years. The average age of our cases was 44 years, the youngest patient being 13 years old, and the oldest 75 years. The lymphosarcomata occur in both children and the aged, while squamous carcinoma of the nasopharynx is rarely seen in patients under 25 years of age.

Unlike the racial differences of incidence seen in carcinomata of the lung and maxillary antrum, this group formed 10% of respiratory malignant diseases seen in Europeans, and 8% of those occurring in the Bantu. In contrast, the Chinese have an undue predisposition to the development of cancer of the nasopharynx as shown by Digby,[5] and this high incidence of the disease occurs also in Chinese born in America. One case in a young Chinese male has been observed in this clinic, despite the very small local Chinese community.

Of the 14 European cases seen, 11 occurred in males and 3 in females, while all 3 Bantu cases occurred in males. This is in agreement with the generally accepted sex incidence that two-thirds of nasopharyngeal tumours occur in males.

Pathology. There were 5 cases of squamous carcinoma, 3 cases of 'malignant polyp,' 1 case of lympho-epithelioma and 6 cases of undifferentiated carcinoma; in 2 cases no histology was obtained.

Clinical Stage of the Disease. The patients were put into 2 groups i.e. 'early' or 'late'. There were 7 early cases with nasopharyngeal tumour present only, and 10 late cases showing obvious metastases or involvement of the base of the skull.

Anatomical Site. The disease affected the post-nasal space in 9 cases including 2 Bantu, the oropharynx in 2 cases, the nasal cavity in 3 cases, and 3 cases including 1 Bantu had tumours of branchial origin.

Diagnosis. It is generally admitted that many cases remain undiagnosed until late, and more than half of the primary nasopharyngeal tumours present clinically with metastatic cervical lymph-nodes. Godtfredsen,[6] New [7] and Nielsen [8] all stress the high percentage of mistaken diagnoses and the numerous types of treatment carried out prior to the final diagnosis being established.

The clinical picture may be complicated, and thus complete investigation of the ear, nose and throat, eyes and central nervous systems is necessary. Radiography of the nasopharynx is of great value, particularly soft-tissue lateral views to outline the tumour, and X-rays of the base of the skull must not be omitted. Tomographs of the nasopharynx will often outline the tumour in great detail, and are of great help after treatment to show the degree of tumour regression. Finally, biopsy is essential to confirm the diagnosis and indicate the type of tumour present, since this is of extreme importance in planning the method of radiation therapy to be employed in each particular case.

Treatment. Only one patient had surgical treatment, whereas 13 patients received radical radiation therapy, and 3 patients had palliative treatment only owing to their poor general condition and the advanced stage of the disease.

Both Harmer [9] and Black [10] have stated that surgery has no place in the treatment of this disease, despite the numerous surgical approaches described, because complete removal of these tumours is not possible. Surgery is also unfavourable because these tumours tend to be anaplastic and develop metastases at an early stage. Radiotherapy is therefore the treatment of choice, but the type of radiation used, i.e. external radiation alone, or external radiation combined with intra-cavitary radium, and the dosage to be delivered, will depend on the type of tumour present. Therefore a biopsy and histological examination of the material removed are essential steps in the management of these cases. An excellent discussion on the problem of early diagnosis of nasopharyngeal cancer is found in the Proceedings of the Royal Society of Medicine (1953).[31]

Results of Treatment. No attempt is made to claim 'cures' because of the short time that has elapsed since treatment, but analysis of these 17 cases shows 8 patients alive and free of disease, and 6 of these for 2 years after treatment. Three patients, 2 of whom are Bantu, are alive with the primary lesion still active, 2 patients have metastases present, 3 have died of the disease and 1 has died of intercurrent disease. These results are comparable with other reported series.

Cade [11] in a series of 18 cases reported 9 cases to be dead, 5 alive and free from disease, and 4 alive with disease. Godtfredsen [6] analysed 266 cases of cancer of the nasopharynx and found 59 (22%) of the patients alive and well 5 years after treatment. Baclesse [12] in a series of 102 patients had 16 alive and well 4 years after treatment.

CANCER OF THE LARYNX

There are 29 cases of cancer of the larynx under review, 25 occurring in Europeans and 4 in the Bantu. This group formed 18% of the European cases of respiratory malignant disease and 11% of the Bantu respiratory malignancies, and like the nasopharyngeal tumours show no undue racial differences.

Sex Incidence. Of the 25 European cases, 23 occurred in males and 2 in females. In the Bantu, all 4 cases occurred in males.

Cade [11] stated that the disease is 10 times commoner in males than in females. Even with the new generation of female smokers, there has been no increased evidence of laryngeal cancer in women.

Age Incidence. The average age of these European cases was 61 years, the oldest case being in a male aged 82 years and the youngest in a female aged 34 years. The average age of Bantu cases was 68 years, the oldest patient being 82 years and the youngest 50 years old. It is interesting to note that the ages of the 2 female cases, 34 years and 44 years respectively, was much lower than that of the males.

Pathology. The growths were squamous carcinoma in 25 cases and anaplastic carcinoma in 1 case; in 3 cases there was no biopsy.

Clinical Stage. Twelve cases were classified as being 'early' and 17 cases were 'late', showing advanced disease.

Anatomical Site. A rough estimate of the anatomical sites is given, although in the 18 advanced cases, it was impossible to be certain of the site of origin of the lesion, because of the advanced nature of the disease. The vocal cord was primarily affected in 22 cases, the pyriform fossa in 4 cases and the epiglottis in 3 cases.

Six cases of carcinoma of the vocal cord had subglottic spread when first seen, and were considered unsuitable

for laryngectomy. Of the remaining 16 cases of 'vocal cord' carcinomata, in only 6 was the disease confined to the vocal cord; in the remainder it had spread to arytenoids, false cord, or across the anterior commissure to the contra-lateral vocal cord.

Diagnosis. The importance of persistent hoarseness cannot be sufficiently stressed; such cases must be fully investigated in order to arrive at earlier diagnosis. Although early laryngeal cancer is eminently curable, Chevalier Jackson [13] has shown that of 200 patients seen with cancer of the larynx only 38 were in a curable stage; the reason he gives for this is that the importance of chronic hoarseness is not generally recognized. Biopsy is essential to confirm the diagnosis, and when the result is negative, the biopsy may have to be repeated more than once if the clinical picture is suspicious. Baclesse [14] has shown the great help which is given by radiography; tomography should be done in all cases to investigate the extent of lesions, which is not always obvious by other means of examination.

Choice of Method of Treatment. In supraglottic lesions the treatment is almost invariably radiotherapy, but there has been much discussion regarding the method to be employed in intrinsic carcinomata of the larynx, i.e. lesions of the vocal cord, ventricle and false cords. Surgery is the proved and time-honoured method and has given good results, but the post-operative quality of the voice has been poor. Radiotherapy is the newer method and hence has been open to much criticism, but authorities like Cade,[11] Ackeman and del Ragato,[15] and Paterson [4] urge that most cases, and in particular the early cases, should be treated initially by irradiation, because of the superior results with regard to the subsequent voice and the avoidance of mutilation.

Should the radiotherapy fail, then surgery, usually in the nature of total laryngectomy, can still be carried out, because previous irradiation does not preclude subsequent surgery, although this fact is not generally appreciated. It has been shown by Harris,[16] Cutler [17] and Brunschwig,[18] all of whom have done laryngectomies following radiation therapy, that there were no added difficulties due to the previous irradiation. On the other hand, recurrence after laryngectomy does preclude subsequent radical radiotherapy, since the tissues are no longer able to tolerate full cancerocidal doses. In laryngeal lesions with subglottic spread total laryngectomy should always be carried out when possible, and this is probably the main indication for this operation.

We have treated 6 patients with subglottic spread and although there has been some palliation and tumour regression, all have died of the disease.

Treatment. Three patients had previous surgery, and were sent for radiotherapy because of recurrence. Twenty-five cases were treated by means of radical radiotherapy and 1 case was given palliative treatment only.

Results. Nine European patients are alive and free from disease, but in 5 of these less than 2 years have elapsed since treatment. Six European patients died of the disease, 1 case 14 years after treatment with recurrent intrinsic carcinoma of the larynx, and another case 8 years after treatment with subglottic spread.

Of the 4 Bantu cases, as far as can be ascertained, 1 is alive and well, and 3 have died of the disease. Four patients have died of disease other than cancer, the laryngeal growths having been cured; 1 patient is alive with disease; and 5 cases have not been traced.

CANCER OF THE LUNG

Carcinoma of the lung and bronchial tree accounts for two-thirds of all tumours of the respiratory tract in Europeans, but only 8% of the corresponding group in the Bantu. Of these cases, 86% were males, a somewhat lower ratio than that usually reported. The average age of this series was 57 years. As generally reported, the right bronchus and its branches was the commonest primary site; 41 cases were shown to have arisen on the right and 27 on the left. An unequivocal histological report was obtained in 50 of the cases reviewed. Of these 68% were bronchogenic squamous carcinomas, 26% were anaplastic carcinomas, and 6% were adenocarcinomas. In addition there was one pleural endothelioma. Two of the 3 cases of adenocarcinoma occurred in women; there was one case in a male, which represents a relatively small fraction of lung cancer in males, confirming Wynder and Graham's findings.[19]

Only 8 cases of our series could be classified as 'early', the tumour being limited to the bronchus or site of origin. Of the remainder, 58 were locally advanced and 30 had metastases when first seen. Seven patients had undergone surgical resection before attending for radiotherapy. Only 44 cases in all were considered suitable for 'radical irradiation' with a view to possible cure, the remaining 56 receiving only palliative treatment for relief of symptoms produced by the primary lesion or by the metastases. During most of this period (1949-52) radical radiotherapy aimed at delivering a tumour dose upwards of 5,000 r within a period of 4-5 weeks, using multiple small fields beam-directed through the lesion. When possible the technique described by Winternitz and Smithers [20] using 12 skin fields was employed. However, the results were not encouraging and more recently grid field techniques have been employed, using 2 or 3 larger (10 cm. x 10 cm., or 10 cm. x 15 cm.) fields, each portal being covered by a lead-rubber sieve with 50% of the area exposed, delivering average tumour doses of 6,000 r in 4 weeks with maximum skin doses approaching 15,000 r. The immediate post-treatment course has been perceptibly more favourable than with the older procedures.

Excluding patients first seen in 1952, in whom the follow-up period is too short to warrant analysis, there remained 70 cases treated more than 1 year previously, among whom a follow-up was obtained in 67 (Table IV). Of these, 4 cases were alive and well, and 5 cases alive with evidence of active disease a year after treatment. Of 26 cases followed for more than 2 years, only 2 were apparently cured. These figures are comparable to those quoted by other authors, bearing in mind that of our series of 70 cases followed for a year, 22 already had distant metastases when first seen and only 8 could be considered early cases. However, radiotherapy has given very useful palliation by relieving cough, pain, dyspnoea and haemoptysis.

TABLE IV. CRUDE SURVIVAL RATES FOR LUNG CANCER

Period Followed	*Treatment Group*	*Number Treated*	*Number not Traced*	*Known Alive*	*Alive with Disease*	*Crude Survival Rate %*
	Radical radiotherapy	30	3	5	3	18
	Palliative Treatment	40	0	4	2	9
1 year ..	Total	70	3	9*	5	13
	Bronchogenic origin proved	36	0	6	4	17
	Ditto, not proved	34	2	3	1	9
	Radical radiotherapy	13	1	2	0	17
	Palliative treatment	13	0	0	0	0
2 years ..	Total	26	1	2*	0	7
	Bronchogenic origin proved	12	0	1	0	8
	Ditto, not proved	14	0	1	0	7

* Of the 9 cases known alive for 1 year, 4 were 'early', 3 were locally advanced, and 2 had distant metastases. Of the 2 cases known alive after 2 years, 1 was 'early' and 1 locally advanced, the latter a proved bronchogenic carcinoma.

DISCUSSION

The behaviour of respiratory tract tumours in our European patients is, in general, not dissimilar to that reported in some larger series overseas. By comparison, however, our series of African patients shows several remarkable features not previously reported, and hence is of some importance in the demography of cancer in South Africa. These include marked differences in the apparent susceptibility to cancer of various anatomical zones within the respiratory tract, as well as certain factors of possible aetiological significance.

Like skin cancer, the age-specific prevalence of respiratory tumours for each decade of life follows the function $(age)^n$ as reported by Fisher and Holloman [21] in the United States and by Nordling [22] in Europe. As shown in Fig. 5, $n = 4$ in the European, but $n = 2$ in the Bantu. The earlier age incidence in the African, therefore, may not be entirely attributable to the lower average age of this group of the population, but possibly indicates the presence of other factors. The earlier onset of cancer in the African compared to the European has also been noted by Mussini-Montpellier [23] in French North Africa.

The incidence of lung cancer in Europeans (two-thirds of the respiratory tumours or about 5% of all malignant cases referred) is similar to that reported by Clemmensen [24] for Denmark. The corresponding figure for the Bantu is only 0.5% of all cancer cases referred. The relative rarity of lung cancer in North Africans has also been reported by Mussini-Montpellier.[23]

In contrast to lung cancer, however, tumours of the paranasal sinuses are very much more frequent in the African than in the European. Comparison with accurate statistical data from other countries emphasizes this difference. Carcinoma of the maxillary antrum accounts for almost 6% of all Bantu malignant cases referred to this department, but only 0.2% of all cancer in the United States.[25] The significance of this finding is, of course, partly offset by the fact that our series selectively excludes cases unsuitable for radiotherapy, such as gastric and intestinal cancer. A more significant comparison, however, is given by the Danish Cancer Registry (Clemmensen [24]) where, of 2,222 cancers of the respiratory system (4.8% of all malignancy), only 130 (0.3%) affected the nasal cavity and accessory sinuses. Our figures seem to indicate, therefore, that the true incidence of cancer of the paranasal sinuses in the Bantu is between 10 and 20 times greater than in the European. Further, unlike cancer of the skin, in which the unusual features observed in the Bantu are shared by all pigmented peoples (Shapiro *et al.*[26]), and cancer of the liver, which is common to both primitive African and Eastern communities (Berman [27]), the incidence of nasal and antral tumours in other pigmented peoples, including some relatively primitive communities (Khanolkar,[28]) (Kouwenaar [29]) is not significantly greater than in the European. In this respect the exceptionally high incidence of carcinoma of the paranasal sinuses seems to be a unique feature characteristic of the South African Bantu, and presumably dependent on local conditions.

It is suggested that the comparative incidence of pulmonary and antral carcinomas in the two racial groups can be accounted for by their different tobacco habits. A history of heavy cigarette smoking for many years was obtained in all cases of bronchogenic carcinoma questioned, in confirmation of Doll's recent findings.[30] If smoking is considered an important contributory factor, it accounts for the relatively low incidence of lung cancer in the Bantu, among whom the quantity of cigarettes consumed is relatively very small. By comparison the American Negro, at least in New York city, is no less susceptible to lung cancer than the White population.[25] But 22 out of 28 cases of antral carcinoma questioned (i.e. 80%) admitted to a prolonged and heavy intake of snuff, compared to 34% of a corresponding group of Bantu males with tumours in other sites. This suggests an important aetiological basis for the relative frequency of this disease. There was no such obvious correlation between antral cancer and cigarette, pipe, or dagga smoking.

Racial factors do not appear to influence the incidence of laryngeal and nasopharyngeal cancers in South Africa.

SUMMARY

1. An analysis of sarcomata of soft tissue and bone has been given.

2. The relative frequency of sarcomata in the Bantu, as compared to the European, has been noted.

3. Racial differences in distribution and response to treatment have been described.

4. The relative frequency of antral carcinoma in the Bantu has been stressed, and the suggestion has been made that snuff taking may be a predisposing factor.

5. The rarity of lung cancer in the Bantu has been noted.

6. The diagnostic difficulties and the treatment of malignant tumours of the nasopharynx have been described.

7. The choice of treatment of carcinoma of the larynx has been discussed.

8. The relative frequency of lung cancer in the European has been noted, and the beneficial palliative effects of radiation in lung cancer have been described.

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ACUTE POISONING IN CHILDREN WITH SPECIAL REFERENCE TO PARAFFIN, ASPIRIN, CAUSTIC SODA AND 'STINKBLAAR' (STRAMONIUM)

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Acute poisoning in children is almost invariably accidental. It may result either from the child's ingesting a noxious substance consequent upon the almost irresistible impulse of putting 'things' in its mouth, or from an overdose of a preparation which has been prescribed for treatment. While it rarely causes death, it results in anxiety, heartache and expense for the parents, and in some cases it may lead to prolonged hospitalization, with the necessity for repeated painful surgical procedures.

Statistically, cases of acute poisoning comprise about 1% of all admissions to the paediatric departments of American hospitals, and account for some 500 deaths annually in that country.[1] In an attempt to ascertain the incidence in Johannesburg, the authors have analysed the admissions to the Transvaal Memorial Hospital in the period 1948-52 inclusive, and have thus been able to determine the number of admissions resulting from acute poisoning, the nature of the various substances involved and the frequency with which they occurred.

The total number of deaths registered in this period in South Africa as resulting from poisons other than gas among European children up to the age of 14 years, was 47, the annual figures being:

1948	8
1949	9
1950	16
1951	14

Of the 39 deaths recorded in the 1949-51 period, the causes were the following:

Unspecified liquid or solid substance	11
Arsenic and antimony compounds	5
Industrial solvents	5
Barbiturates	4
Petroleum products	4
Salicylates (usually aspirin)	3
Corrosive substances	2
Unspecified drugs	2
Noxious foodstuffs	2
Strychnine	1

The relative increase in the percentage of poisoning cases admitted to the Transvaal Memorial Hospital for Children in the period under review is shown in Table I. It will be noted that the rise has been steadily

TABLE I. CASES OF POISONING ADMITTED

Year	*Total No. of Cases Admitted*	*Cases of Poisoning*	
		Total No.	*Percentage*
1948	3,839	84	2·2
1949	4,829	122	2·5
1950	3,585	123	3·4
1951	3,429	142	4·1
1952	3,229	123	3·8
Total	18,911	594	3·1

maintained (1952 excepted), and that these figures far exceed the American ones.

The high incidence of poisoning may possibly be accounted for by the fact that it is hospital policy to admit all cases giving a history of ingestion of a noxious substance, even if only for a short period of observation.

The highest incidence of poisoning occurs in the 1-2 year age-groups (see Table II). This corresponds to the 'toddler' stage, when the child's natural curiosity causes him to put everything within reach in his mouth. The figure of 43% for this group corresponds well with

TABLE II. DISTRIBUTION OF CASES ACCORDING TO AGE-GROUP

Age-Group	1948	1949	1950	1951	1952	*Total*	*Per-centage*
0—6 mths.	3	0	5	7	7	22	3·7
6—12 mths.	1	4	2	5	4	16	2·7
1—2 yrs.	39	58	59	57	49	262	43·7
2—5 yrs.	29	50	41	61	51	232	39·1
5—14 yrs.	12	10	16	12	12	62	10·8
Total	84	122	123	142	123	594	100·0

the incidence observed in Australia by Clark Ryan,[2] who found that 47% of cases occurred in the second year of life. Lueck [3] also found the highest incidence in this age-group in a report of cases from an American hospital.

An analysis of the various noxious substances has been carried out; they have been classified into various groups, as follows:—

A. *Household Articles*

Paraffin 152, caustic soda 57, arsenic (ant poison) 16, benzine 14, turpentine 8, ammonia 7, carbon tetrachloride 5, nicotine (garden spray) 4, alcohol 4, phosphorus (rat poison) 3, petrol 3, 'Brasso' 1, DDT 1, 'Flushex' 1, marking ink 1, shoe polish 1, 'Home-Perm' preparation 1. Total=279 cases.

B. *Drugs*

Aspirin 73, barbiturate 36, laxative 15, camphorated oil 11, opium preparations 10, potassium permanganate 10, methyl salicylate 9, sulphadiazine 8, dexedrine 6, cresol/phenol 6, anti-epileptic drugs 6, benadryl 5, eucalyptus oil 4, iodine 4, mercurials 4, belladonna 4, bromide 3, digitalis 3, stilboestrol 2, hydrochloric acid 2, mercurochrome 2, calamine 2, stella oil 2, quinine 1, thiouracil 1, *borsdruppels* 1, ferrous sulphate 1, antimony 1, chlorine 2, witch hazel 1, copper sulphate 1, thyroid tablets 1. Total=237 cases.

C. *Food Poisoning*

Total=25 cases.

D. *Vegetable Poisons*

Stinkblaar 20, various seeds and leaves 15, castor oil beans 5, mushroom 4, dagga 1. Total=45 cases.

E. *Miscellaneous*

Dry ice 7, Coal Gas 1. Total=8 cases.

The frequency of the substances most commonly involved is as follows:—

	No. of Cases	*Percentage*
Paraffin (including petrol and benzine)	169	28·5
Aspirin	73	12·3
Caustic soda	57	9·6
Barbiturate	36	6·2
Food poisoning	25	4·2
Stinkblaar	20	3·4

In view of the frequency with which several of these poisons are encountered, the features and management of poisoning from them are separately discussed.

PARAFFIN POISONING

Paraffin is used extensively in the home. While it is marketed in large tins, it is far more commonly retailed in different kinds of bottles brought by the customers. It is understandable that a child who has previously been given a drink from a bottle should have no qualms

TABLE III. AGE DISTRIBUTION IN PARAFFIN POISONING

Age-Group	1948	1949	1950	1951	1952	*Total*
0—6 mths.	0	0	0	0	0	0
6—12 mths.	0	0	1	0	1	2
1—2 yrs.	16	23	25	30	17	111
2—5 yrs.	2	5	8	14	8	37
5—14 yrs.	0	0	1	0	1	2
Totals	18	28	35	44	27	152

in helping himself to the paraffin now contained in the same bottle. This is probably the most important factor responsible for the high incidence of this form of poisoning.

The age distribution of the 152 cases of paraffin poisoning is shown in Table III.

No great quantity is often taken, nor is a large quantity necessary to produce paraffin pneumonitis detectable on radiological examination. Since paraffin has an unpleasant taste, the first few mouthfuls evoke spluttering, coughing and gagging actions which probably result in the inhalation of the paraffin.

The authors encountered only 1 fatality from paraffin ingestion in the period under review. Typical X-ray changes develop within hours of the poison being swallowed, and persist for some 10-21 days. Apart from a cough and a low-grade pyrexia for 2-3 days, recovery is usually complete and uncomplicated.

Prophylactic penicillin and sulphadiazine are given as a routine measure. The efficacy of gastric lavage is controversial: the authors have discontinued stomach-washing as a routine procedure, since it is felt that the retching, vomiting and struggling associated with the passage of the tube causes regurgitation of stomach contents, with the further possibility of inhalation.

Lesser [4] and Reed [5] believe as a result of animal experiments that pneumonitis is caused by aspiration of paraffin and not by absorption from the gastro-intestinal tract. Deichman [6] on the other hand has demonstrated pulmonary changes when kerosene has been instilled directly into the stomach. It is the general impression in this hospital that there has been less pneumonitis since gastric lavage has been discontinued.

ASPIRIN POISONING

A striking increase has occurred in the number of cases of aspirin poisoning occurring in the latter years of the period under review. This is shown in Table IV, which also shows the age distribution of the 73 cases of aspirin poisoning. The heaviest incidence is seen to be in the first 6 months of life.

Acute aspirin poisoning occurs either as a result of a child's taking tablets of his own accord (47 cases out of the 73 were of this nature) or of his being given the drug as medicine.

It is in the latter group that the 3 fatalities in this series occurred. These were infants in the first year of life who had been given aspirin for its antipyretic and analgesic affect.

TABLE IV. AGE DISTRIBUTION IN ASPIRIN POISONING

Age-Group	1948	1949	1950	1951	1952	*Total*
0—6 mths	0	0	2	7	5	14
6—12 mths.	0	1	0	4	2	7
1—2 yrs.	1	1	2	3	11	18
2—5 yrs.	4	4	6	10	8	32
5—14 yrs.	1	0	0	1	0	2
Totals	6	6	10	25	26	73

Though aspirin and salicylate poisoning in children has been dealt with by a number of authors,[7-9] there still does not appear to be a general appreciation of the toxic manifestations of aspirin intoxication. Hyperventilation is perhaps the most constant and most important sign. Tinnitus cannot usually be elicited in infants and young children. Vomiting is common. Thirst, pyrexia and at times hyperpyrexia may be present. There is profuse sweating, mental confusion and sometimes delirium. Convulsions commonly supervene. Late manifestations are cyanosis, purpura and respiratory failure. The diagnosis should always be borne in mind in all cases of hyperventilation where no other cause for this alarming sign can be found.

Examination of the urine may show the positive ferric chloride test for salicylate. Laboratory investigation reveals a high blood-salicylate level, usually a low CO_2-combining power, and not infrequently a raised blood urea, as well as interference in the clotting mechanism of the blood (hypoprothrombinaemia).

Aspirin intoxication is a serious condition which requires urgent and efficient management. Intravenous therapy is employed. Sodium R. lactate or Ringer's solution is given according to weight and this is followed by 5% glucose water. Vitamin K, 10 mg. intravenously, should be given to combat the hypoprothrombinaemia. Serum or blood transfusion may be indicated in cases where peripheral failure supervenes, while general supportive therapy is maintained until the body is able to eliminate the salicylate from the system. Dry lumbar tap has been done in several cases. In accidental cases, as opposed to therapeutically-induced intoxications, gastric lavage and the liberal administration of sodium bicarbonate help to minimize the effect of the salicylate.

CAUSTIC SODA POISONING

This is the most serious accidental poisoning to occur in children, yet no control exists regarding the sale of caustic soda. It is freely obtainable in any grocer's store. Although caustic soda has been to a great extent supplanted in domestic use by the modern detergents, it is still freely used for the cleansing of drains, and the removing of paint and varnish.

The age distribution of the 57 cases in this group were as follows:

6—12 mths.	2
1—2 yrs.	17
2—5 yrs.	32
5—14 yrs.	6

It will be seen that the highest incidence again occurred between the ages of 1 and 5 years. The years 1949 and 1950—when 20 and 15 cases respectively were admitted to the hospital—showed a marked increase in the number of cases treated. In seeking for the reason for this rise, the authors found that this period corresponded more or less with a period of soap shortage in this area. Caustic soda was probably found more frequently in homes at that time, as a result of the home manufacture of soap.

Poisoning from caustic soda may be caused by the ingestion either of the crystals or the prepared solution. It is usually sold in crystalline form in tins, when to a child it resembles a boiled sweet. When placed in the mouth the child automatically first sucks the crystal. When he appreciates the burning nature of the substance he either spits it out or swallows it. The solution is usually found in the kitchen, dissolved and ready for use in a cup or glass container. The thirsty child seeing a normal drinking utensil containing a clear odourless liquid will unhesitatingly drink its contents.

The treatment and management of a case of caustic-soda poisoning is a tedious and painful affair. Repeated dilatation of the oesophagus is the least unpleasant of the therapeutic procedures. Feeding by a gastrostomy opening may have to be instituted, while it may be necessary to carry out oesophago-gastrostomy in childhood. The immediate treatment is directed to the neutralization of the alkali, but the most difficult task is to ensure patency of the oesophagus.

'STINKBLAAR' POISONING

Datura stramonium is a noxious weed which grows fairly abundantly in the district. It is variously known as *stinkblaar*, stinkweed, thornapple or devil's apple.

It contains the poisonous alkaloids of the atropine group, and while all parts of the plant are poisonous, most, if not all, of our cases resulted from the ingestion of the berries, which were mistaken for edible fruits.

Clinically, signs of intoxication may follow within 30 minutes of ingestion, although usually the time interval is between 2 and 4 hours. Thirst is the commonest complaint: there is a feeling of dryness in the mouth and throat with an accompanying difficulty in swallowing, while the voice becomes hoarse and speech difficult. The face and skin are flushed owing to dilation of the superficial vessels, and feel hot and dry. There is dilation of the pupils with consequent disturbance of vision. Later the patient becomes confused and may suffer hallucinations; he may show giddiness and staggering. The mental picture deteriorates until the patient is actually maniacal. This acute mania may be followed by depression, stupor and coma.

As a routine procedure all cases undergo gastric lavage in the casualty department. They are then admitted to a separate ward, which by preference is darkened and from which all forms of noise are excluded. Of the drugs used to control the delirium, barbiturates and paraldehyde by injection have proved the most effective. No death has occurred from this cause. The 20 cases in this series were distributed as follows:

1—2 yrs.	7
2—5 yrs.	10
5—14 yrs.	3

PREVENTION OF ACUTE POISONING

At a time when great emphasis is laid upon the prevention of disease, it is sad that poisoning in children—accidents which are entirely preventable—should still constitute a not inconsiderable proportion of hospital admissions.

While large sums of money are spent on the prevention of traffic and industrial accidents, the community is inclined to overlook the more subtle and insidious dangers to which children are exposed in the normal surroundings of the home. Harmful and potentially dangerous substances are allowed to lie about within reach of the curious toddler.

Drugs and medicinal substances should be kept in a cupboard, preferably locked, and most certainly placed beyond the reach of the ever-exploring child in his quest for novel experiences and adventures.

Legislation is needed to prohibit the sale of poisonous substances in containers which are recognized as legitimate vehicles for the sale of foodstuffs and liquids. The storekeeper should be prevented from dispensing paraffin in a bottle which normally is used to contain drinkable preparations; perhaps the oil companies could provide a bottle or metal container in which it could be sold. Such containers should be distinctive in shape and design, and should preferably be supplied with a stopper which requires either ingenuity or strength to open it.

More stringent control over the availability of caustic soda should be introduced. It might be advisable to make the substance available only through certain channels, and even then only on the signature of an adult. In this way the person who may require to use caustic soda, realizing the trouble to which he has been put, will take the necessary precautions for the care of the chemical and for the safety of others. Bold printing on the container advising reasonable care and emphasizing the dangerousness of the contents should be made compulsory.

Stinkblaar, although a declared noxious weed, still flourishes abundantly on unused plots and on open veld. Its fruits are as inviting as they are toxic. Prevention of the accidental ingestion of these berries can be brought about by the more rigid enforcement of the law which make it obligatory on landowners to keep their properties free of these noxious weeds. The education of children in the poisonous nature of these plants is also essential; but while schools might be an avenue through which propaganda could be spread, it should be noted that the larger proportion of cases occurs in the pre-school child. A greater awareness on the part of parents, and the ability to recognize the weed, might help to eradicate this plant from gardens and vacant plots, and so remove a poisonous substance from within the reach of unsuspecting children.

While aspirin has been acclaimed as the safest and most useful drug in the pharmacopoeia, too few people are aware of its dangers and limitations. Even among medical practitioners there is an insufficient appreciation of the dangers of aspirin intoxication.

Acute aspirin poisoning occurring in a child who has helped himself to the contents of a bottle of aspirin is easily understandable. Less evident, is the intoxication which results in young infants when aspirin has been administered as a therapeutic agent.

In certain conditions, particularly in gastro-enteritis and broncho-pneumonia, the administration of aspirin constitutes a real danger. Since the drug is normally excreted by the kidneys, any condition which diminishes urinary output will interfere with its excretion, and result in its retention in the blood stream; levels as high as 54 mg. % were recorded from repeated small doses in a case of gastro-enteritis. Not infrequently aspirin is prescribed in conjunction with sulphadiazine; this must be regarded as bad therapeutics. Aspirin, for its analgesic and antipyretic properties, is a useful drug, but it should not be prescribed for children in repeated doses. It should never be prescribed in a mixture, and is best ordered in single doses as a tablet to be crushed in a little water and to be repeated only when ordered. Parents should be warned of the dangers of giving it indiscriminately to children under 1 year of age.

As a final consideration attention is drawn to the potential danger lurking in the tendency to make medicines attractive to children. Potentially toxic and harmful drugs are disguised with a variety of flavourings and sweetening agents and appear as pleasant-tasting, appealingly-packed medicines, which tempt the sight and palate of children. There is obvious danger in these preparations, and in laxatives put up in the form of chocolates and other sweetmeats.

SUMMARY

The incidence of acute poisoning in cases admitted to the Transvaal Memorial Hospital for Children, Johannesburg, is analysed for the period 1948-52.

The commoner poisonings encountered are described,

and preventive measures and methods of treatment are discussed.

A plea is made for greater care in the keeping of drugs and dangerous substances in the home, and for legislation controlling the sale and packaging of dangerous substances such as caustic soda and paraffin.

The danger of aspirin as a therapeutic agent in infants is discussed.

We wish to thank Dr. K. F. T. Mills, Superintendent of the Johannesburg General Hospital, and Dr. Seymour Heymann, Head of the Pediatric Department, University of the Witwatersrand, for permission to publish this report and for access to the records of the hospital; also the Department of Census and Statistics, Pretoria, for information in regard to deaths recorded in South Africa from poisonous substances.

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THE SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS *

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The advances in the surgical treatment of pulmonary tuberculosis have been dependent on several factors.

The antibiotics have been found to have a direct effect not only on the tubercle bacillus, but also on the secondary invading organisms, which commonly cause the complications of surgery.

Positive-pressure anaesthesia and the use of relaxant drugs have eliminated many of the hazards of operation. More extensive operations can be done as surgical shock is minimal, there is no spread of the disease during the operation, and the anaesthetist, by various manoeuvres, can assist the surgeon in the delineation of the segments of the lung.

Improved surgical technique as the result of experience, the discovery of special non-irritant suture material for the repair of divided bronchi, and the use of non-irritant plastic material such as polythene sponges and prostheses have all contributed to the success of modern surgical therapy for pulmonary tuberculosis.

Knowledge of the pathology and course of the disease applied to the clinical state and the radiographic findings determines the choice of treatment in the individual case. Today, in many clinics, there is a tendency to dictate treatment on radiographic appearances alone, but it must be stressed that the clinical examination and symptomatology of the patient are always necessary adjuncts to a correct assessment for treatment; e.g. surgical treatment may be indicated on X-ray examination but, when the patient is seen, he may be found to be well and asymptomatic, and to have been sputum-negative for a long period.

The surgeon attached to large clinics very often finds himself employed purely as an operator-technician, as he does not see his patients after operation. This practice, even though unavoidable, is deplorable.

The discovery of more potent antibiotics or anti-bacterial drugs in the future may render redundant many of the surgical procedures to be described in this article.

* A Lecture

CLASSIFICATION OF THE DISEASE

Acute Disease. Pulmonary tuberculosis must be considered to be in an active acute phase when the sputum is positive and general constitutional symptoms and signs such as cough, fever, malaise, loss of weight, sweats, hoarseness or anorexia are present. The changes in the acute disease may be of short duration and are often reversible. In other cases, constitutional signs and symptoms may be absent, and yet radiological examination may show evidence of acute active spreading disease. The radiographic appearances of the acute disease include cavitation, pleural effusion, and the mottling of infiltration.

Chronic Disease. Chronic or old-standing disease may be active or stationary. In the active form, spread of the disease may actually be taking place with an absence of constitutional symptoms; usually, however, in such cases the sputum is positive. In the stationary form, constitutional symptoms are absent, the sputum is only occasionally positive, and the disease-process is apparently halted. The radiographic appearances of chronic disease show evidence of fibrosis, calcification, and distortion of surrounding and vital structures.

Quiescent Disease. Pulmonary tuberculosis can only be regarded as quiescent when there has been no clinical or radiographic evidence of activity of the disease over a period of 2 years. The sputum must necessarily be negative during this time. It must always be remembered that the original disease may break down or complications appear, after many years.

Healed Disease. For classification purposes pulmonary tuberculosis may only be regarded as healed when it has been quiescent for 10 years.

PATHOLOGICAL CHANGES

1. *Infiltration.* Infiltration, shown on the X-ray film by mottling, due to areas of reaction round the involved lymph nodules in the parenchyma of the lung, provides

one of the earliest radiographic signs of the disease. Though infiltration is evidence that the disease-process is active, complete resolution of such involved sites may occur, with concomitant clearing-up of the radiographic changes.

2. *Fibrosis.* As the areas of infiltration heal they may disappear completely or they may be replaced by fibrous tissue. This scar tissue shows as dense shadows on the films and as the pleural linings and interlobar septa thicken they become clearly visible on the radiographs. Contraction of the fibrous tissue distorts the surrounding structures, producing displacement of the trachea, and peaking of the diaphragm, or forms dense shadows in the lung parenchyma. It is a sign of healing.

3. *Calcification.* The original site may become calcified as the disease process resolves and heals. Many of these calcified nodules have been shown to contain live bacteria. The calcification may remain as the only evidence of previous tuberculous infection. It must however be remembered that one site may be healing while the disease is spreading elsewhere, and calcification and infiltration may occur simultaneously in the X-ray film.

4. *Pleural Effusion.* The usual response to a small sub-pleural focus is a pleural effusion. The quantity of the effusion varies and if it is small in amount the pleurisy is painful. Larger quantities of effusion keep the pleural layers separated, and there pain is absent. Diligent search may reveal tubercle bacilli in the effusion, which is actually evidence of active disease. The mechanical effect of the effusion is to compress the lung.

5. *Pleural Thickening.* The visceral and parietal pleurae may adhere when the effusion resolves. If there is already slight compression of the lung and the thickening is gross, incarceration of the lung with consequent immobility of the chest wall, will result. Pleural thickening usually signifies quiescent disease.

6. *Empyema.* Tuberculous empyema results from the invasion of the pleural cavity by a very large number of bacilli, emanating from a sub-pleural focus. The pleural cavity thus becomes a tuberculous 'abscess'. A mixed tuberculous empyema will follow the contamination of this tuberculous infection by secondary invading organisms. Empyema is always evidence of activity of the disease, and may occur in acute and chronic forms.

7. *Pneumonitis.* The coalescence of numerous areas of infiltration may result in a solid area of pneumonitis involving a segment or even an entire lobe or lung. These changes may revert back to normal when the acute reaction has settled down.

8. *Cavitation.* Tissue destruction in a pneumonitic area will lead to the development of cavitation. Large ragged cavities result, and erosion of the blood vessels may lead to haemorrhage.

A small ulcerated site may ulcerate into an alveolus or a bronchiole. If a ball-valve mechanism is produced, a distension 'cavity' may develop. This is really ballooning of an air-space; the cavity is thin-walled, and there is no real tissue damage, as evidenced by the fact that the cavity collapses and disappears if the ball-valve mechanism opens up.

It can thus be seen that cavitation may be due to permanent damage of the lung tissue, or to temporary and reversible changes due to infiltration.

9. *Broncho-Pleural Fistula.* A broncho-pleural fistula may result from the extension of cavitation into the pleural cavity. A tension-pneumothorax develops as a result of the escape of air from the bronchiole, through the tuberculous cavity, into the pleural space. Infection of the pleural space may result in the formation of an empyema, which may either be coughed up along the causative fistulous path, or may rupture externally, leading to a broncho-pleura-cutaneous fistula. Obviously this condition is associated with permanent pulmonary and pleural injury.

10. *Atelectasis.* If the secretions from a breaking-down site, such as a cavity, empty into the bronchi, an obstruction leading to atelectasis may result, with a consequent bronchiectasis. Relief of the obstruction may show the bronchiectasis to be of a temporary nature.

11. *Bronchial Narrowing.* Bronchial narrowing will lead to a retention of the secretions and a resultant permanent bronchiectasis. Atelectasis of the affected segment, lobe or lung results from complete bronchial stenosis, which is caused by ulceration round the bronchus with permanent changes in the bronchial wall.

12. *Miliary Tuberculosis.* The evacuation of the contents of a small cavity or gland into a pulmonary vein leads to widespread miliary tuberculosis. Emboli of bacilli travel through the heart into the systemic circulation.

Emptying of the cavity or infected gland into the pulmonary artery results in flooding of the whole of the lung fields, with massive pulmonary changes. If the bacilli pass through the lung filter back into the pulmonary vein, systemic miliary tuberculosis occurs. This is an uncommon sequela.

The widespread pulmonary changes just mentioned are often referred to as 'bronchogenic spread.' This, in my opinion, is a misnomer, as it should then occur very much more frequently, when one considers the numbers of patients with quantities of infected material in the bronchi.

13. *Tuberculoma.* Retention of the cavity contents in an enclosed area is evidenced by a rounded solid shadow on X-ray examination. Evacuation of the contents of this tuberculoma will be demonstrated when a thin-walled cavity is seen instead of the pre-existing solid mass. Evacuation of the tuberculoma into a blood-vessel will lead to pulmonary or systemic bacillary embolism (see 12).

14. *Middle-Lobe Syndrome.* This term is used to designate involvement of the right middle lobe. In fact, it can involve any lobe, but the right middle lobe is far more commonly affected than any other. The condition is actually an atelectasis of the lobe, due to the pressure of enlarged glands round the bronchial orifice. Constriction of the bronchus results and, as the glands heal by a process of fibrosis, this constriction becomes permanent, and a bronchiectasis of the affected lobe is the final result.

SURGERY IN THE TREATMENT OF PULMONARY TUBERCULOSES

We have seen that a definite decision can be made as to whether the patient is suffering from acute, chronic, arrested, or healed disease, and whether the changes in the pulmonary fields are reversible or permanent.

Some resolution of the disease-process can be expected in the acute or active forms of the disease; so all cases should have a preliminary course of medical therapy. It is only under very exceptional circumstances that surgical treatment is instituted immediately following the patient's first visit.

Obviously, if there is permanent lung damage, temporary alleviating measures are useless. Spread of the disease can occur at any time.

The surgical axiom that all normal tissues should be preserved should be constantly borne in mind.

Immediate pre-operative X-ray films should be taken, as there may have been spread of the disease in the interim period between assessment of the case and the time of operation. Major surgical procedures are very seldom done while the disease is active and spreading, as this may lead to an acceleration of the extension.

Surgical treatment may be instituted as an urgent measure, or only after preliminary observation and assessment.

Major or minor procedures may be performed as part of a general therapeutic programme. Major therapeutic measures of a permanent nature are generally used when the disease-process is irreversible. Minor or temporary procedures are employed when there is a chance that resolution of the process can occur. Radical surgery implies the removal of the affected part. Reparative measures are employed to improve function or restore posture.

It must be remembered that general clinical appraisal of the patient plus assessment of the radiological findings and examination of vital functions such as vital capacity and blood and cardiovascular states are always essential preliminary pre-operative requirements.

SURGICAL PROCEDURES

1. *Phrenic Paralysis.* This operation, which is declining in popularity, is employed to reduce the work of a lung after a course of medical therapy and rest. It should essentially be used for the early case, and as it requires 6—9 months for the nerve to regenerate, the effects of rest and antibiotics can be well consolidated.

In cases of extensive bilateral disease affecting one lung more than the other, a phrenic paralysis may be combined with pneumoperitoneum treatment. There are, naturally, cases in which the changes are not only extensive and bilateral, but also permanent and unsuitable for any radical surgery.

As after a phrenic crush the nerve regenerates in 6—9 months, the operation can only be regarded as a temporary measure. Up to 5% of cases, however, remain with a permanent paralysis of the diaphragm.

2. *Internal Pneumonolysis.* Adhesion-section is being less frequently performed these days, because artificial pneumothorax treatment is not so commonly employed. In cases where the presence of adhesions interferes with the efficiency of the artificial pneumothorax an adhesion-section is usually done about 4 weeks after the pneumothorax induction.

Adhesion section may be an urgent manoeuvre. If a patient develops a spontaneous pneumothorax, adhesions may actually be keeping a rent in the lung open. Division of the adhesions will allow of its closure. Similarly, adhesion section may become urgently necessary in the treatment of a dangerous haemoptysis, in order to convert a pneumothorax into an efficient compressing agent.

3. *Pulmonary Decortication.* This operation is devised in an attempt to restore normal function to the lungs. The lung may become incarcerated or enclosed in a thick fibrous capsule as a result of old artificial-pneumothorax treatment, following on pleural effusions, or as a complication of tuberculous empyema. The fixed chest wall with the incarcerated lung may cause considerable loss of function, even though the underlying lung tissue is normal. Furthermore, deformity develops, as only one side of the chest is mobile. Decortication implies the removal of this fibrinous layer, which extends over the lung and chest wall. It is surprising to see how well the pulmonary tissue re-expands after being 'held captive' for many years.

If associated permanent lung-damage exists, the decortication may have to be supplemented by some other radical surgical treatment. It is therefore necessary to have an accurate pre-operative assessment of the underlying lung condition. This may necessitate not only good tomographic films but also good bronchograms.

Emphasis must be laid on the importance of post-decortication physiotherapy. If this physiotherapy is inadequately performed or neglected, the lung may revert to its incarcerated state within a few weeks.

4. *Thoracoplasty.* This operation, which was originally devised to bring about a compression effect in cases in which a pneumothorax induction could not be performed, has stood the test of time. Its main application is to cases in which the disease involves more than one lobe, particularly if both sides are affected, one apparently inactive and having remained so, according to radiographic examination, for about six months.

The design of the operation is to produce concentric relaxation in cases where the disease process has led to cavitation. The size of the entire hemithorax is reduced by this procedure, which is done in stages, as it usually requires resection of more than 4 ribs. The upper stage operation is frequently combined with an apicolysis, by which the dome of the pleural cavity and lung is reduced to the level of the 4th thoracic vertebral body.

Though various techniques are used to imbed the scapula, I personally maintain the scapula in a position superficial to the ribs, with the general object of gaining good compression of the lung with minimal disorganization of posture and appearance.

Thoracoplasty operations may also be used to obliterate part of the space in the upper part of the chest following on a lobectomy when it is advisable to avoid over-expansion of the remaining lobes. An apicolysis is not necessary in such cases.

Thoracoplasty following on pneumonectomy in order

to obliterate the residual space, will necessarily be an extensive operation.

In the past, a thoracoplasty was performed in the treatment of some types of chronic empyema, the rationale being that it would bring the chest wall down on to the lung. This operation is not done nowadays, a decortication being more advisable; the lung freed from its restraining fibrinous capsule will be encouraged to re-expand to its previous boundaries.

Again, post-operative physiotherapy is of prime importance. Pain and fear induce the patient to keep his limbs immobile, and before long, without adequate guidance, permanently bad posture may develop.

5. *Plombage.* This is a modification of the thoracoplasty operation. Rib resection and scapula implantation are supplanted by a method of compression of the lung by the insertion of several leucite balls external to the parietal pleura, but within the ribs. Paraffin plombage, which was employed many years ago, was abandoned because of the high risk of infection. The technique of plombage is not a good choice of treatment to my mind, but it is still employed in some thoracic surgical centres.

6. *Pulmonary Resection.* Resection of the whole lung, an entire lobe, or segments of a lobe can be performed.

Strict pre-operative assessment concerning general condition, vital capacity, and state of the remaining lung tissue, must be observed before an entire lung is resected.

When a permanently disorganized lobe or segment has been removed, the remaining lung tissue then over-expands to occupy the whole space. If the condition of the remaining lung parenchyma gives rise to anxiety, an upper thoracoplasty or a phrenic paralysis with a pneumoperitoneum should be performed in order to reduce the size of the pleural cavity, and avoid this over-expansion.

In cases where the disease is localized to one lobe of the lung, which has been permanently disorganized, pulmonary resection may be said to cure the patient, a word always used reservedly in the treatment of pulmonary tuberculosis.

Resection treatment has really only won its favoured place since the introduction of the antibiotics. It is now possible to perform these operations without the fear of a tuberculous infection of the incision, a complication which in the past constituted one of the tragedies of major chest surgery.

The essential principle underlying resection treatment is the selective removal of diseased tissue and the conservation of normal tissue. If there is doubt, it is very often more expedient to consider a thoracoplasty, which preserves all tissues whether they be diseased, doubtful, or unaffected.

Several new methods have been introduced to aid in the obliteration of the residual space following on pneumonectomy or lobectomy. Probably the most ingenious of these is the insertion of a plastic prosthesis or polythene sponge shaped in the form of the resected lung tissue.

As a result of a pneumonectomy, not only is there only one lung for ventilation purposes, but also only one lung field remains to contain the circulating blood volume. If this vascular field is insufficient, acute plumonary oedema ensues. This is important and should be borne in mind when pneumonectomy is contemplated.

7. *Extra-Pleural Pneumothorax.* This operation, though still used, is no longer as popular as in previous years. It is essentially used in cases where lung compression is required to lead to closure of cavities.

Pulmonary resection, which removes the permanently diseased lung-tissue, and thoracoplasty, which gives a permanent compression of the pulmonary parenchyma, are preferable procedures, for extra-pleural pneumothorax is only a temporary measure and therefore not suitable for cases evidencing permanent lung-damage.

8. *Injection of Cavities.* Most of the patients who cannot be treated by the usual medical or surgical methods are extremely ill people suffering from extensive disease, usually with one or more large cavities. A variety of mixtures of oils and also streptomycin have been injected into these cavities, with varying results, though in some cases dramatic improvement has been seen.

CONCLUSION

The surgical treatment of tuberculosis, which has been briefly reviewed in this article, has undergone many important changes in the past 10 years. It is vital to keep an open and inquiring mind on this subject, for the new antibiotics may well transfigure the entire existing picture of treatment within the next few years.

Post-operative postural therapy following on major thoracic procedures should be regarded as a routine measure.

Psychological aid to adjustment may be necessary for patients suffering from chronic disease.

Modern surgical treatment, even of a major category, with the aid of antibiotics, and post-operative physiotherapy and rehabilitation, offers the patient a good chance of being restored to his normal position in society.

LEAD CALCIUM EDTA

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The lead complex of ethylenediamine tetraacetic acid (lead EDTA; 'sequestrol-lead complex NA2, Geigy') has been shown experimentally to be a satisfactory contrast medium [1, 2] when given orally for visualization of the alimentary canal, and by injection, as for intravenous pyelography. A study of its pharmacological

actions showed that a transitory fall of blood pressure was produced on intravenous injection (in cats) but in larger doses of the complex than those required for urography.[2] The depressor action was shown to result from an action on the myocardium and was presumed to be due to a disturbance of the calcium-potassium ion balance;[3] electrocardiographic records strengthened this view. It was therefore of interest to determine whether the lead *calcium* complex of ethylenediamine tetraacetic acid (lead calcium EDTA) would differ in this respect from the lead sodium complex previously used and be free from depressant action on the heart.

Experimental Results

Lead calcium EDTA was found to be less soluble than the lead sodium EDTA previously investigated. The highest concentration in warm Locke's solution used in this study was a 15% solution, the pH value of which was 7.0. The animals were anaesthetized when necessary with pentobarbitone sodium given intraperitoneally.

Radiography. Oral administration of 1 ml. doses of the solution to albino rats produced good homogeneous shadows of the stomach and the intestines. The whole gastro-intestinal tract became demonstrable within a few minutes and subsequently for several hours.

Intravenous injection of 0.5 ml. doses in anaesthetized adult rats failed to produce shadows of the kidneys. This is in striking contrast to the results obtained with lead sodium EDTA.

Actions. Oral administration of 2 ml. doses to rats did not cause untoward clinical effects. Intravenous injection of 1 ml. per kg. in cats produced a small rise of blood pressure in some experiments. There was no change in the calibre of blood vessels of the intestine. Electrocardiographic records showed depression of the ST segment and inversion of the T wave, returning towards normal twenty minutes after the injection. In anaesthetized rats 0.5 ml. could be administered with safety intravenously if given slowly, but larger amounts given rapidly arrested the respiration. Isolated segments of small intestine of the cat were not altered in tone or contractility by concentrations of the drug as high as 1 in 1,200.

Discussion

Lead calcium EDTA in 15% solution produced satisfactory shadows of the gastro-intestinal tract when given orally to rats; but denser shadows can be obtained with solutions of lead sodium EDTA [1, 2] as much more concentrated solutions can be used. A suspension of the lead calcium complex would allow higher concentrations and denser shadows to be obtained. Both lead complexes might prove suitable in man for outlining the alimentary canal. Possibly one may be better tolerated than the other.

The lead calcium complex proved unsuitable for intravenous pyelography because the low solubility does not enable an adequate concentration to be injected; a small increase in blood pressure may be produced. In contrast the lead sodium complex is effective for intravenous urography [2, 3] and with this complex a transitory fall of blood pressure only occurred with larger doses than those necessary for radiography.

SUMMARY

Lead calcium EDTA in aqueous solution (15%) produces a homogeneous shadow of the stomach and extends rapidly along the intestine so that a shadow of the entire gastro-intestinal tract becomes demonstrable on a single film. Intravenous injection does not produce shadows of the kidneys (cf. lead sodium EDTA) as only a low concentration can be used.

The lead calcium EDTA (designated 'Sequestrol-lead complex CA') used in this investigation was prepared by The Geigy Company Ltd., Rhodes, Middleton, Manchester, to whom my thanks are again due. Mr. J. W. Bates assisted with the experiments. Expenses were partly defrayed by a grant from the C. L. Herman Research Fund.

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THE SICKLE-CELL TRAIT IN THE SOUTH AFRICAN BANTU

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There is increasing evidence that the gene-mutation which gave rise to haemoglobin S, and with that to the sickle-cell, did not take place in Africa but somewhere in the East. The Indian Peninsula appears at the moment the most likely area.[1] It has been suggested that the gene was introduced into East Africa in comparatively recent times by people possessing short-horn Zebu cattle, and that this migration stopped short at the Zambezi River.[2] It has also been suggested that haemoglobin S provides some protection against malaria,[3] thus explaining the survival of a gene which in the homozygous state leads to the lethal condition of sickle-cell anaemia.

Most of the work in support of the idea that the Zambezi acted as a barrier was done in Southern Rhodesia, but supporting evidence is now accumulating from the Union of South Africa, as can be seen in the following table:

Author	*Sample*	*Percentage sicklers*
Altman [4] (1945)	403 Bantu from Johannesburg	0·25
Esrachowitz *et al.*[5] (1952)	1,555 Cape Coloured	0·58
Griffiths [6] (1953) } Budtz-Olsen [7] }	More than 500 Bushmen	0
Griffiths [8] (1954)	354 Bantu from Transvaal	1
	421 Bantu from Zululand	0
	252 Bantu from Bechuanaland	2
	1,741 Bantu mineworkers	0·1
	500 non-European hospital patients	0·4

To this list we now add a small group from the Ciskei. Fingertip blood from 89 Bantu (Nguni 76, Sotho-Tswana 12, Bavenda 1) at Fort Hare University College and Lovedale Hospitals was examined, using 2% sodium disulphite as reducing agent. No sickle-cells were found.

The sickle-cell trait is therefore virtually absent in the Union of South Africa. This fact cannot be explained on the basis that the gene for haemoglobin S survives only in areas where malaria is endemic, which is in any case a doubtful theory [9], since malaria has certainly been present for generations at least in Zululand.

The best explanation is undoubtedly that the South African Bantu arrived south of the Zambezi before the haemoglobin S gene was introduced into Africa.

Our thanks are due to Professor Z. K. Matthews, Acting Principal of Fort Hare University College, for facilities given to us at the College; to Miss B. de Villiers of the College's Department of Zoology; and to Drs. P. G. Jacobs and S. R. Sinclair of the Lovedale Hospitals.

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FAREWELL LUNCHEON TO DR. WOLF RABKIN

A farewell luncheon was given on 22 December 1954 in honour of Dr. Wolf Rabkin on the occasion of his retirement from the University of Cape Town and the Groote Schuur Hospital (he is, however, continuing in private practice). Those present, about 80, consisted of senior members of the medical professorial unit and other hospital departments and senior representatives of the nursing staff. A presentation was made to Dr. Rabkin.

Dr. Wolf Rabkin

Dr. F. J. Ford, the Professor of Child Health, who presided, spoke appreciatively of Dr. Rabkin's work at the hospital and University and the warm friendship they had towards him.

Professor F. Forman spoke of Dr. Rabkin's indefatigable and successful efforts in building up the paediatric department at the University and to promote the new Children's Hospital. His outstanding characteristic was his goodness of heart; he never refused to do his best for any child—rich or poor.

Dr. W. Emdin emphasized Dr. Rabkin's idealism.

Dr. Rabkin expressed his thanks to Professor Ford. He went on to say that 27 years had passed since he became Paediatric Registrar at the New Somerset Hospital and Clinical Tutor at the University. He paid tribute to the kindness he had received from the Principal and his predecessors and also to the memory of his earlier chiefs Louis Leipoldt and Dowie Dunn. He said this was a memorable occasion in his life, which he took as a symbol of forgiveness and good will. He had been called a stormy petrel—often in less elegant terms. 'I am leaving', he said, 'this tiny, almost imperceptible, niche I made for myself, with your help, without malice or envy. I admire those who possess an unusual degree of serenity and calmness of manner, and those who use no vehemence in their argument.' 'He that is slow to anger is of good understanding, but he that is hasty of spirit exalteth folly' (Proverbs XIV, 29).

Dr. Rabkin went on to mention certain principles and practices which they had adopted in the paediatric department at Groote Schuur.

1. Always to attend to your hospital work in spite of the exigencies of private practice. This they had tried to do for nearly a quarter of a century.

2. Admit into the paediatric department every *bona fide* paediatrist. If he is kept outside, his work will deteriorate and his soul will be embittered.

3. Besides daily ward-rounds he had organized a weekly combined ward-round, to widen the sphere of their knowledge, to raise the clinical standard, and to give their child patients the benefit of modern scientific cooperative medicine. Professor Forman attended every week to discuss cases, to their very great advantage. The help given by Professor Brock had stimulated nutritional research in the paediatric department. Dr. Jannie Louw was their surgical vigilator. The paediatric department was intertwined with almost every other department in the hospital. The response of the others to their requests has always been swift, informative and helpful.

4. In 1927, on the initiative of Professor Crichton and his colleagues a department for the new-born was opened in the Peninsula Maternity Hospital—the first in the Union and then one of the few in the Commonwealth. Seven of their men are now looking after 7,000 new-borns per year. They felt that in teaching hospitals every new-born baby ought to be seen by a paediatrist. Professor James Louw has hastened the pace and added to this pleasant burden of their department.

5. The young members of the staff were encouraged to write and to publish.

6. There were many shortcomings in their department, some due to his own deficiency, but some he would ascribe to the part-time system—a system subject to serious criticism. Latterly they acquired whole-time staff—Drs. Smythe and Sutin, to whom Dr. Rabkin paid tribute —and also younger men.

Dr. Rabkin indicated how the paediatric teaching facilities for medical students had been increased, largely at the request of the students.

He recalled some sentences from the talks he gave to the nurses at the Peninsula Maternity Hospital in 1927: 'In no sphere of human activity is there so much absolute reliance and mutual trust as between the doctor, the chemist and the nurse .... An adult can at least grumble—often unjustly—against his nurse. An infant or small child is helpless. The nurse must therefore have scientific knowledge to carry out a doctor's orders intelligently. She must

have sufficient knowledge not to flinch from refusing to do what she is not qualified to do but adequate enough not to flounder when she has to help in an emergency. The crude method of trial and error will inevitably raise the infantile mortality rate. She must be observant—objective observation is the only available method in infants. She must be very patient. Patience is valuable in obstetrics; it is vital in infants. She must be truthful; and she must be active and fully awake.'

In an address to the hospital residents he had said: 'No modern hospital department can be of real aid to the sick child unless there is whole-hearted cooperation, mutual trust, and scientific discussion, especially between the chief and the assistants. Lack of this reverberates upon the sick child put in our trust. These postulates are the keystone of our profession. They do not change as the years go by and they are particularly pertinent to all of us who are engaged in the teaching department of a hospital.'

Dr. Rabkin offered his congratulations to Professor F. J. Ford as the first Professor of Child Health and referred to his great personal charm, organizing ability and profound medical knowledge.

In conclusion Dr. Rabkin recalled that 16 years ago he was associated with Dr. Shadick Higgins and the late Dr. Dowie Dunn in writing a report on the necessity for a children's hospital in Cape Town. When the Province, on the practical initiative of the South African Red Cross Society (Cape Region), began to move in the matter it entailed much hard work, hours of consultation with the architects, discussion with numerous committees. Now, as I look across the Rondebosch Common I see the New Children's Hospital rising and taking shape. I call it the Promised Land. I feel, however, like our ancestor Moses, who was not fated to enter the Promised Land. To you younger men, whose hands hold the torch of scientific thought and discovery, I would say, 'Your duty is "To strive, to seek, to find, and not to yield", and I would add with J. S. Whittier:

> 'Press on! and we, who may not share
> The toil and the glory of your fight,
> May ask, at least, in earnest prayer,
> God's blessing on the right.'

INDUSTRIAL HEALTH

An international panel of experts has recommended that the International Labour Organization seek further substitutes for arsenic, benzene and materials containing silica in certain industrial processes, and for certain poisonous substances used in agriculture.

It is also proposed that the ILO should promote the collection and publication of information on substitution of harmless or less harmful substances for dangerous ones in manufacturing processes. It is felt that an Encyclopaedia of Occupational Safety and Health would make an important contribution to the prevention of all occupational risks.

A further proposal is that a text of guiding principles should be prepared and published for the organization of industrial medical services.

A new international list of occupational diseases with explanatory notes has been adopted.

CONTROL OF RABIES IN RHODESIA

The Federal Government have promulgated two Notices (Federal Government Notices Nos. 1 and 2 of 1955) in the Federal Government Gazette of 7 January 1955 applicable to the Mtoko Native District. The effect of the notices is:

(1) All dogs within the area, being an Infected Area, shall be confined, chained or tied up for a period of 90 days from 10 January 1955. Any 'official' who during this period finds any dog in the area which is not confined, chained or tied up, may destroy the dog.

(2) All dogs within the area unless vaccinated against rabies or re-vaccinated since 1 January 1954, shall be subjected to re-vaccination before 31 March 1955. Note.—Under the provisions of the Rabies (Vaccination of Dogs) Order 1954 (Federal Government Notice No. 557 of 1954), all dogs over the age of 3 months must be vaccinated within 1 month of attaining that age.

PROVISIONS IN QUARANTINE AREA

The above Orders are promulgated under the Rabies Regulations No. 766 of 19 September 1952 (Southern Rhodesia) which declared the whole of Southern Rhodesia a Quarantine Area, and prescribed the following provisions:

The owner of any 'animal' (defined as any canine, feline or an animal defined in the Animal Diseases Act) showing symptoms or suspected of rabies shall destroy or isolate the animal and notify the nearest 'official' (defined as magistrate, police and certain others).

The 'official', if it appears to him that any 'animal' is showing suspicious symptoms or has been in contact with a possible case of rabies, shall order isolation and control on the premises of the owner or other suitable place pending investigation. If this is not possible the official may himself order the destruction of any animal which appears to him to be suffering from rabies and report to an inspector under the Act.

On the inspector's instruction the brain of any 'animal' dead or destroyed may be sent to a veterinary officer for scientific diagnosis.

Except certain vaccinated dogs (see below) an inspector shall order the isolation, control or destruction of any 'animal' which has been in contact with a case or suspected case of rabies.

The Controller of Stock may by notice in the Government Gazette declare any area to be an Infected Area, and revoke such a declaration.

Except certain vaccinated dogs (see below) the owner of any canine in an Infected Area shall keep it securely collared and confined, chained or tied up until an inspector has granted written permission for release. Subject to the same exception, if an 'official' discovers a canine not so confined etc. he shall destroy it as soon as possible.

The owner of land or premises in an Infected Area may destroy any dog at large on his property.

Any person destroying a dog shall report the fact to the nearest 'official'.

The carcase of any 'animal' destroyed on account of rabies shall be burnt or buried 6 feet covered with quicklime or disinfectant.

No person shall without the written permission of a Controller of Stock, cause to be moved any canine or feline into, or through, or from place to place within, a Quarantine or Infected Area except from place to place within the area of one Village Management Board, or Town Management Board, or Municipality (including its commonage), or farm or plot (or two or more contiguous farms or plots owned, occupied or leased by the same person), or, in Native Reserve or Crown Land within a radius of 5 miles of the place where the canine or feline is normally kept. The owner may exercise a canine or feline in an Infected Area provided it is on a leash or chain and muzzled, and thus move it within such areas.

VACCINATION

The Controller of Stock may order all dogs in an Infected or Quarantine Area to be vaccinated or re-vaccinated and marked accordingly. Thirty days after vaccination or re-vaccination (1) the dog need not be confined or chained or tied up, (2) if subsequently found to have been in contact with a case of rabies is not subject to compulsory destruction and (3) may be moved to any

part of the Colony. [By a later regulation the Controller of Stock may define areas forming part of an Infected or Quarantine Area and order that all dogs within those defined areas shall be confined or chained or tied up, notwithstanding vaccination; if an 'official' discovers a canine not so confined etc. he may destroy it.]

No person may move a dog into an Infected or Quarantine Area except not less than 14 days nor more than 12 months after it has been vaccinated or re-vaccinated and marked.

The Regulations impose a penalty for offences and grant powers of entry to officials.

POLIOMYELITIS IN THE UNION

Following are the returns, supplied by the Union Department of Health, of cases notified under the Public Health Act as suffering form Poliomyelitis in the period 7 to 13 January 1955.

	European	Non-European
Transvaal:		
Johannesburg	9	2
Pretoria	4	
Pretoria P.U.A.H.B.	3	
Bedfordview	1	
Brakpan	2	
Brits	1	
Brits district	1	
Benoni	2	1
V.d. Bijl Park	2	
Rustenburg	1	
Boksburg	2	
Alexandra Health Committee		1
Germiston	1	1
Trichardt		1
Total for Transvaal	29	6
Cape Province:		
Cape Town (one case ex Salisbury)	1	1
Cape Divisional Council	4	
Adelaide		1
Stellenbosch Divisional Council		1
Somerset West	1	
Indwe Municipality		1
Indwe Divisional Council	1	
Matatiele Divisional Council		1
Uitenhage Divisional Council		1
Cradock Municipality		1
King William's Town Div. Council		1
Venterstad (ex Senekal)	1	
Matatiele Municipality	1	1
East London Municipality	1	
De Aar (ex Potfontein)		1
Oudtshoorn (ex Bloemfontein)	1	
Van Rhynsdorp Div. Council	1	
Mafeking district		1
Total for Cape Province	12	11
Natal:		
Durban	9	3
Mapamulo district		1
Westville	1	
Hilton Road	1	
Pietermaritzburg district		1
Pietermaritzburg Municipality	1	1
Nongoma district		1
Pinetown	1 (fatal)	
Umkomaas		1
Amatikulu	1	
Ladysmith		1
Escombe		1
Verulam district	(fatal)	1
Umlazi district		1
Eshowe district		1
Total for Natal	14	13
Orange Free State:		
Bloemfontein	1	
Rouxville	1	
Viljoenskroon district	1	
Kroonstad district		1
Harrismith	1	
Jagersfontein	1	
Koppies		1
Total for O.F.S.	5	2
TOTAL FOR UNION	**60**	**32**

Union Department of Health Bulletin. Report for the 7 days ended 13 January 1955:

Plague. Orange Free State: One (1) European case and one (1) Native death in the Lindley district. The diagnosis of the fatal case was confirmed by laboratory tests. *Cape Province:* No further cases have been reported from the Williston district since the notification of 15 December 1954. This area is now regarded as free from infection.

Smallpox, Typhus Fever: Nil.

Epidemic Diseases in Other Countries:

Plague: Nil.

Cholera in Chalna, Dacca (Pakistan); Calcutta, Madras (India).

Smallpox in Lahore, Chittagong (Pakistan); Basra (Iraq); Bombay, Calcutta, Delhi, Jodphur, Kanpur, Madras (India); Moulmein (Burma); Phnom-Penh (Cambodia); Saigon-Cholon (Viet-Nam).

Typhus Fever: Nil.

PASSING EVENTS : IN DIE VERBYGAAN

Research Forum: Faculty of Medicine, University of Cape Town. The next meeting will be held in the large ground floor lecture theatre, Groote Schuur Hospital, on Wednesday, 2 February, at 12 noon. *Speakers:* Prof. R. H. Goetz and Dr. O. E. Budtz-Olsen. *Subject:* 'Observations on the circulatory system of the giraffe.' All medical practitioners are invited to attend.

* * *

The William Gibson Research Scholarship for Medical Women. Miss Maud Margaret Gibson has placed in the hands of the Royal Society of Medicine a sum of money to provide a Scholarship in memory of her father, the late Mr. William Gibson of Melbourne, Australia. The Scholarship is awarded from time to time by the Society to qualified medical women who are citizens of the British Commonwealth; and is tenable for a period of two years, but may in special circumstances be extended to a third year. The next award will be made in July 1955 to date from October 1955.

In choosing a Scholar the Society will be guided in its choice either by research work already done by her, or by research work which she contemplates. The Scholar shall be free to travel at

her own will for the purpose of the research she has undertaken.

There is no competitive examination, nor need a thesis or other work for publication or otherwise, be submitted. The Society has power at any time to terminate the grant if it has reason to be dissatisfied with the work or conduct of the scholar.

Applications should be accompanied by a statement of professional training, degrees or diploma, and of appointments, together with a schedule of the proposed research. Applications must be accompanied by testimonials, one as to academical or professional status, and one as to general character. Envelopes containing applications, etc., should be marked 'William Gibson Research Scholarship' and should be addressed to Mr. R. T. Hewitt, Secretary, Royal Society of Medicine, 1 Wimpole Street, London, W.1, England, and be received not later than 1 June 1955. The approximate value of the Scholarship will be £200 per annum.

BOOK REVIEWS : BOEKRESENSIES

PAEDIATRICS

Textbook of Pediatrics. Edited by Waldo E. Nelson, M.D. Sixth Edition. (Pp. 1581 + xviii, with 440 figures. $15.00.) Philadelphia and London: W. B. Saunders Company. 1954.

Contents: 1. The Field of Pediatrics. 2. Care and Evaluation of Well Children 3. General Factors in the Care of Sick Children. 4. Prenatal Disturbances. 5. The Newborn Infant. 6. Unexpected Death. 7. Nutritional Disturbances. 8. Infectious Diseases. 9. Poisoning from Drugs, Metals and Food. 10. The Digestive System. 11. The Respiratory System. 12. The Cardiovascular System. 13. Diseases of the Blood. 14. The Spleen. 15. The Lymphatic System. 16. The Thymus Gland. 17. Disturbances of Cellular Lipid Metabolism and Related Conditions. 18. The Genitourinary System. 19. Psychologic Disorders. 20. Disorders in Language Function. 21. The Nervous System. 22. Convulsive Disorders. 23. Cerebral Palsy. 24. The Endocrine System. 25. Diabetes Mellitus. 26. Hypoglycemia. 27. The Bones and Joints. 28. The Muscles. 29. The Skin. 30. Burns. 31. The Eye. 32. Allergic Diseases. 33. Unclassified Diseases. 34. Neoplasms and other Tumors. 35. Radiation Injury. 36. Adolescence. Appendix. Index.

The combined names Mitchell-Nelson at once suggest to the initiated not some obscure symptom-complex but a reference book of the highest quality. For years it has been an authoritative guide, with a place of distinction on the bookshelves of paediatricians, irrespective of their age or experience, and there is probably no book more frequently consulted by them. The new edition, though no longer 'double-barrelled' on the editorial page, will assuredly be prominent in the armamentarium of specialists and general practitioners alike, since its range is over the whole field of paediatrics—preventive, diagnostic, and therapeutic. It would be very difficult to find a paediatric topic on which one or other of the distinguished contributors does not touch.

Current fashion in text-books of this calibre favours the production of two or more volumes and the preface explains that a certain amount of editorial pruning has been necessary to avoid making this one volume unwieldy. This laudable accomplishment, quite contrary to the widely held conception that if it's American it will aim at being both bigger and better, has entailed the curtailment of some sections on which medical interest has been focussed. B.C.G. vaccination, for instance, might have been discussed at more length. But, to compensate for such brevities, there is at the end of each section a short bibliography which opens the door to further information.

There are many tables, graphs, photographs and reproductions of X-ray plates. The standard of these is admirable. At long last colour photographs make a welcome appearance in a text-book. If they are inclined to blush a little on their début their modesty is unnecessary; they are very effective. The tables and graphs are excellent. The index is beyond reproach. The size of the print is agreeable but the greyness of the printing is open to criticism and might with advantage be reconsidered when the next edition is being prepared.

The new Nelson, in the familiar blue binding, is as acceptable as the older editions were and, compared to other similar text-books, is a bargain, and an excellent investment for anyone interested in the practice of paediatrics, be he a final-year student or of more senior status. Wholeheartedly recommended.

F.J.F.

HARMFUL SIDE-EFFECTS OF DRUGS

Schadelijke Nevenwerkingen van Geneesmiddelen. L. Meyler. Tweede Vermeerderde Druk. (Bl. 311. fl. 12.50). Assen: van Gorcum & Comp. N.V. 1954.

Inhoud: 1. Geneesmiddelen, die Een Stimulerende Werking Hebben op het Centrale Zenuwstelsel. 2. Geneesmiddelen, die Een Verlammende Werking Hebben op het Centrale Zenuwstelsel. 3. Analgetica. 4. Antipyretische Analgetica. 5. Anaesthetica. 6. Geneesmiddelen, die Verslapping der Spieren Geven. 7. Geneesmiddelen, die Invloed Uitoefen op het Sympathische Zenuwstelsel 8. Antihistaminen. 9. Geneesmiddelen, die op de Hartspier Werken. 10. Metalen. 11. Metalloiden. 12. Sulfonamiden. 13. Andere Chemotherapeutica. 14. Antibiotica. 15. Geneesmiddelen tegen Malaria. 16. Geneesmiddelen tegen Amoeben. 17. Wormmiddelen en Insecticiden. 18. Laxantia. 19. Hormonen. 20. Andere Orgaanextracten. 21. Anti-schildklierpraeparaten. 22. Anti-coagulantia. 23. Cytostatica. 24. Bloed en Bloedvervangingsmiddelen. 25. Vitaminien. 26. Sera en Vaccins. 27. Disulfiram. 28. Diverse Geneesmiddelen. Register.

For a long time the one great need in therapeutics has been a comprehensive publication on the unpleasant side-effects and dangers of drugs used in the treatment of disease. That need has now been amply provided for by Meyler in this book. The author emphasizes the fact that most stress is laid on the diagnosis of disease, and rightly pleads for better instruction in therapy. The harmful side-effects of more than 800 drugs used in therapeutics are dealt with; also the symptoms of poisoning of a few of the more commonly used insecticides, like DDT, parathion and gammexane, are recorded. The different classes of drugs are usefully grouped in different chapters and a very complete list of references is given at the end of each chapter. The publishers state that from time to time supplements to the book will be published; these should be most useful.

This publication is of very great value and should occupy a prominent position in the libraries of all those using drugs in the treatment of disease.

D.G.S.

CHEMOTHERAPY

Chemotherapy of Infections. By H. O. J. Collier, B.A., Ph.D., M.I.Biol., with a Foreword by Sir Alexander Fleming. (Pp. 248 + xvi, with 53 illustrations and 21 tables. 18s.). London: Chapman & Hall, Limited. 1954.

Contents: 1. Two Fundamental Principles. 2. Microbial Attack and the Body's Defences. 3. Selective Poisoning. 4. The Problem of Getting the Chemical to the Microbe. 5. How Some Antimicrobial Substances May Work. 6. The Development of Resistance to Drugs by Microbes. 7. Antibiotics. 8. Penicillin. 9. Streptomycin, Neomycin and Viomycin. 10. The First Success of Experimental Chemotherapy. 11. Penicillin in Spirochaetal Infections. 12. The Sulphonamides. 13. The Chemotherapy of Tuberculosis and Leprosy. 14. The Chemotherapy of Some Tropical Diseases. 15. The Chemotherapy of the Malarias. 16. Summing Up. Subject Index. Author Index.

This publication is written for the *Frontiers of Science* series (general editor Bernard Lovell, *O.B.E.*, Ph.D., F.Inst.P.) by Dr. H. O. J. Collier, a leading British industrial pharmacologist. To quote from its cover pages: 'This series fills the gap in scientific publications between the very elementary and the specialist text-books .... The series should prove of inestimable value to scientists who wish to understand what is happening in subjects other than their own.'

As with many books which endeavour to achieve wide appeal, it suffers from loss of balance, with the result that from the medical point of view the terminology tends to be loose and the pace somewhat pedestrian. However, the historical perspective relating to the development of antibiotics and arsenical derivatives is of universal interest and is ably presented from first-hand experience.

The medical man will find chastening reminders that inadequate doses of sulphonamides may stimulate, rather than inhibit bacterial growth; and that penicillin may inhibit the growth of bacteria less effectively at concentrations exceeding the optimum. It would have been just as well had the author also reminded us that inopportune antibiotic therapy may permit the formation of 'sensitizing antibodies' only, as opposed to the more tardily formed 'immune antibodies'—with the consequence that re-infection might present as one of the increasingly commoner allergies.

The tabulated information and the illustrated formulae are most

informative to all students of medicine, and the photographs are excellent. Figure 6, showing the circulation of an intravenous injection of Decholin, requires re-orientation.

In its present form this publication will find its greatest appeal to the non-medical pharmacologist, for it provides not only commendable accounts of the rationals in pharmacology, but also wide references to medical literature.

R.S.

CLINICAL PSYCHIATRY

Clinical Psychiatry. By W. Mayer-Gross, M.D. (Heidelberg), F.R.C.P. (Lond.), Eliot Slater, M.A., M.D. (Camb.), F.R.C.P. (Lond.), D.P.M. and Martin Roth, M.D. (Lond.), M.R.C.P. (Lond.). Pp. 652 + xx, with 16 illustrations. 50s.). London: Cassell & Company, Ltd. 1954.

Contents: 1. Introduction. 2. Examination of the Psychiatric Patient. 3. Mental Deficiency. 4. Psychopathic Personality and Neurotic Reactions. 5. Affective Disorders. 6. Schizophrenia. 7. Symptomatic Psychoses. 8. Chemical Intoxications and Addictions. 9. The Epilepsies. 10. Mental Disorder in Trauma, Infection and Tumour of the Brain. 11. Ageing and the Mental Diseases of the Aged. 12. Child Psychiatry. 13. Administrative and Legal Psychiatry. References. Index.

Yet another new book on psychiatry needs some justification. It may, however, be said straight away that this book does justify itself.

Canning said, 'I called the New World into existence to redress the balance of the Old'. This certainly came to pass in the psychiatric field, which has for the last quarter century been dominated by the Americans. They have done a great deal of admirable work, but much of their writing has been woolly and turgid, with its sense obscured by a spate of words, many of which had acquired highly specialized meanings, which made a dictionary necessary for the ordinary medical reader. Moreover their writing is often based on philosophies or theories which are far from universally accepted. Thus one may cite the rather uncritical acceptance of Freudian psycho-analysis by so many in the United States. Many American authors also have an irritating habit of ignoring non-American literature, so that their publications tend to give the reader a distorted view of the evolution of certain aspects of psychiatry. As an example one may mention their tendency to assume that all biochemical studies in schizophrenia stem from Hoskins's work. They seem to be unaware of important researches done by men like Gjessing and others in Europe.

These defects are avoided in this book, and one may say that here is an attempt to swing back the pendulum from an American towards a more essentially European orientation. For this purpose the background and experience of at least one of the authors is admirably suited. Not that American literature is by any means neglected. All the important work is there—Adolf Meyer and Kallmann (incidentally both originally from Europe), Rosanoff and Sheldon—but so are Kraepelin, Janet, Kahlbaum, Bleuler, Kretschmer, along with many other British and European workers.

The approach in this book is essentially clinical, so that while the theoretical formulations of the various schools of psychopathology are duly discussed, the authors are not wedded to any particular theory, and treat the subject on a rational, common-sense basis which greatly appeals to your reviewer. In fact anybody reading this book must be struck by the happy resemblance it bears to a good, straightforward text-book on general medicine, and by its unpretentious practical approach. After all psychiatry is a branch of medicine and should not be regarded as an esoteric study intelligible only to its initiates.

As may be expected from the names of the authors the genetic aspect is well done, and so is physical treatment. Perhaps some excessive enthusiasm for the insulin treatment of schizophrenia is shown; and we think the value of E.C.T. in schizophrenia is unduly played down.

In dealing with the paranoid conditions one regrets the failure to mention the paranoid reaction that was so frequently seen in soldiers on active service during the last war. From 1940 onwards many such cases were sent down to the Union from North Africa; and until we realized that they all recovered spontaneously, it appeared as if a goodly portion of the Second Division was developing the paranoid type of schizophrenia.

As one who has previously advocated such a measure, your reviewer is particularly pleased to see that the authors favour the calling of independent psychiatric witnesses by the Court in medico-legal cases, and the abolition of the system whereby one psychiatrist appears for the defence and another for the prosecution. They so often give contradictory evidence, and are readily tempted into displays of intellectual acrobatics which do their own reputations no good and may damage the prestige of the whole profession.

This book will be widely read in the British Commonwealth and it is disappointing to note that while the legal systems of Great Britian, the U.S.A., and many European countries are described, there is no mention of our own Mental Disorders Act, or that of any other Commonwealth country.

An American trend, and a very good one, is the format of the book, quite unlike the usual English text-book. The pages are large, the paper is of good quality, and the printing excellent.

Altogether it is a satisfying production. While hardly suitable as a medical students' text-book, it can be strongly recommended for post-graduates, as a reference work for general practitioners, and as a valuable stand-by for psychiatrists in private and in hospital practice.

M.M.

YEAR BOOK OF OBSTETRICS AND GYNAECOLOGY

Year Book of Obstetrics and Gynaecology. By J. P. Greenhill, B.S., M.D., F.A.C.S. (Pp. 544 with illustrations. $6.00). Chicago, U.S.A. Year Book Publishers, Inc. 1954.

Contents: Obstetrics. 1. Pregnancy. 2. Labor. 3. Puerperium. 4. The Newborn. Gynecology. 1. General Principles. 2. Diagnosis. 3. Infertility. 4. Operative Technic. 5. Infections. 6. Endometriosis. 7. Malignant Tumors. 8. Menstrual Disorders. 9. Endocrinology.

As the years pass it becomes increasingly difficult for one to cover the vast amount of medical literature published annually; and a publication such as the Year Book is essential for those practioners who desire to keep abreast of their subject. As in previous editions a wide range is covered and added interest is provided by the comments of the editor.

The question of post-maturity remains one of the interesting problems of obstetrics. In our present state of knowledge there is no way of assessing the frequency of the condition. Of late there has been a tendency to consider it more common than was formerly thought; however, one agrees with Greenhill when he states that true post-maturity is uncommon; and that to believe otherwise will result in unnecessary interference in what may well be a normal pregnancy.

In the section of Gynaecology, a number of papers on vaginal hysterectomy would indicate the growing popularity of this operation. This is an ideal operation in selected cases; especially where in addition to the hysterectomy a vaginal repair is necessary. The convalescence phase is usually more comfortable and the tendency to complications less marked. Vaginal hysterectomy, too, is becoming increasingly advocated for the treatment of procidentia. However, this view is not generally held, and there are many who feel that an operation such as the Manchester carefully performed will adequately cure the prolapse in these cases.

When the abdominal approach to hysterectomy is considered there is general agreement with a view that the total hysterectomy is the operation of choice. Wesley (Amer. J. Obstet. Gynec., **67**, 293, February 1954) studied 800 cervices removed during total abdominal hysterectomy and found that 63% were already the seat of benign disease at the time of removal. As Greenhill states, in addition to preventing cervical carcinoma, the operation also prevents many unpleasant symptoms, such as pelvic pain, leucorrhoea, backache and dyspareunia.

The present Year Book of Obstetrics and Gynaecology maintains the standard set by its predecessors and forms an ideal bedside companion for those interested in this subject.

T. St. v. B.

YEAR BOOK OF MEDICINE

Year Book of Medicine. 1954-1955. By Paul B. Beeson, M.D., Carl Muschenheim, M.D., William B. Castle, M.D., Tinsley R. Harrison, M.D., Franz J. Ingelfinger, M.D., Philip K. Bondy, M.D. (Pp. 711, with illustrations. $6.00). Chicago: The Year Book Publishers. 1954.

Contents: 1. Infections 2. The Chest. 3. The Blood and Blood-Forming Organs. 4. The Heart and Blood Vessels and the Kidney. 5. The Digestive System. 6. Metabolism.

The Year Book of Medicine, 1954-55 series, follows the pattern of previous years, and is as useful a publication as its predecessors.

The articles abstracted are largely from the American literature, with some few from the British. Editorial comments at the end of abstracts or groups of abstracts do not hesitate, where necessary, to be critical of the authors' conclusions, such comments serving to instil into the busy medical practitioner a critical outlook on whatever he reads.

As in previous Year Books, the abstracts are selected to show the year's trends of thought and discovery in Medicine, and are sufficiently detailed to be of considerable help to the reader.

The regular subscriber to the Year Book series is in the position, through the selection of readings provided, of being made aware of all important trends and advances over a wide field, without the onerous and often impossible duty of wading through numerous journals. The abstracts, furthermore, are a keen stimulus to read more widely, where necessary.

This volume, like previous ones, can be recommended to all clinical practitioners interested in general medicine. It is a pity that the price has risen to 4 times what it was 20 years ago, but even at the present price the book is a valuable yearly addition to the practitioner's library, where its excellent index offers a readily available path towards solving difficult diagnostic and therapeutic problems.

G.A.E.

ENDOCRINE GLANDS

Glandular Physiology and Therapy. Prepared Under the Auspices of the Council on Pharmacy and Chemistry of the American Medical Association. Fifth Edition. (Pp. 611 + xx. 80s.). London: Pitman Medical Publishing Co., Ltd.

Contents: 1. Integration of Endocrinology. 2. The Adenohypophysis. 3. Hypophysis: Posterior Lobe. 4. The Adrenal Cortex. 5. Adrenal Medulla. 6. The Ovary. 7. Physiology of Menstruation and Ovulation. 8. Pregnancy and Lactation. 9. The Testes. 10. The Thyroid. 11. The Parathyroid Glands. 12. The Pancreas. 13. The Thymus. 14. Abnormalities of Body Weight. 15. Endocrine Management of Neoplastic Diseases. 16. Abnormalities of Sexual Behavior. 17. Therapeutic Uses of Cortisone and Corticotropin (ACTH) in Nonendocrine Conditions. 18. Behavior and Intelligence. 19. Common Misconceptions in Endocrine Therapy. 20. Diagnostic Aids. 21. The Chemistry of Hormones. 22. Modes of Administration of Hormones. Index.

This publication is a symposium on the physiology of the endocrine glands and the therapy of disorders due to the deranged function of these glands. Each chapter is written by 1, 2 or 3 authors, some of whom are essentially physiologists and others clinicians. This results in a complete lack of uniformity of approach from section to section and endocrine gland to endocrine gland. Thus in some chapters there is an overwhelming amount of physiological detail carefully composed and analysed with a minimum of clinical application inadequately discussed. In other chapters the situation is reversed with an almost entirely clinical approach and the minimum of physiology.

This can be most strikingly shown when the chapter on the anterior pituitary gland is compared with that on the adrenal cortex. In the former, there is an excessive amount of experimental and physiological fact and hypothesis, covering 45 pages, with the succeeding 4 pages devoted to an inadequate clinical discussion of the endocrinopathies. In the latter, approximately half the chapter is dedicated to a physiological summary (adequate to the clinician but probably of little use to the physiologist) with the remainder consisting of a good clinical survey of the present situation.

Perhaps the most outstanding chapter in the volume is that on the parathyroid glands. Both the physiology and the clinical aspects are adequately presented in a very readable fashion. The chapter on obesity, one of the major problems of our day, can similarly be recommended and is well worth studying. Other chapters that can be recommended for their clinical approach and information are those on hyperthyroidism and hypothyroidism, the pancreas, the adrenal medulla and the posterior pituitary gland. Of almost entirely physiological interest are the chapters on menstruation, ovulation, pregnancy and lactation. These are full and possibly over-long. There is little of clinical interest in the sections dealing with the male and female sex organs.

A special chapter is devoted to the endocrine management of neoplastic diseases. The dosage schedules are clearly stated. An attempt is also made at assessing the conflicting claims of surgery and medical therapy; for example, the place of orchidectomy and oestrogen therapy in the management of carcinoma of the prostate.

In conclusion, then, this volume serves no uniform purpose, being adequate neither for the physiologist nor for the clinician. It cannot be recommended without reserve to the general practitioner or to the general physician. As with all books on the endocrine glands the subject-matter rapidly becomes out of date and this volume is no exception, being prepared in 1952. The section on cortisone and ACTH for example is entirely inadequate. Lastly, in common with many American publications the references are extensive but with a definite bias towards American authors.

V.S.

THE CARE OF CHILDREN

The Care of Children from One to Five. By Dr. John Gibbens, M.A., M.B., M.R.C.P. Fifth Edition. (Pp. 208 with illustrations. 5s.). London: J. & A. Churchill, Ltd. 1954.

Contents: 1. Growth and Development. 2. The Feeding of Young Children. 3. Feeding Errors and Difficulties. 4. Clothes. 5. Fresh Air and Sunshine. 6. Sleep and Rest. 7. Good Posture. 8. Play. 9. Books and Music. 10. Holidays, Treats and Picnics. 11. Speech. 12. The Care of the Eyes and Teeth. 13. The Control of Bowel and Bladder. 14. The Training of Character. 15. Weaning the Child from Dependence to Independence. 16. Problems of Management. 17. The Problem of Sex. 18. Keeping Well. 19. The Prevention of Accidents. 20. First Aid. 21. The Sick Child. 22. Common Diseases of Childhood. Appendix A.B.C.D. Index.

This little book is written for mothers, but is an extremely useful and practical handbook for nurses, nursery-school teachers, and in fact all who have to deal with young children. The normal development of the child—physical, mental and emotional—is described, and the requirements at the different ages are clearly explained. Sound practical advice on diet, hygiene and clothing is given, applicable to various climates and types of home. In discussion on the mental and emotional development and the various problems which arise in young children, the child's requirements in the way of stability at home, affection, suitable places to play, and suitable play-material, are stressed. The common behaviour-problems such as thumb sucking, night terrors and temper tantrums are dealt with in a clear common-sense way.

Notes are given on the common ailments of childhood, sufficient to inform the mother of the signs of illness which should prompt her to seek medical advice.

Very little space is given to the subject of nursery schools and nursery-school education, a subject of great importance in any discussion of children in this age-group. It is nevertheless a very readable and useful book.

I.R.

THE TRAINING OF THE EXPECTANT MOTHER

Childbirth: Theory and Practical Training. By Majorie F. Chappell, D.N. (Lond.), S.R.N., C.S.P., S.C.M., H.V. Cert. (Pp. 128 + viii with illustrations. 7s. 6d.) London and Edinburgh: E. & S. Livingstone, Ltd. 1954.

Contents: 1. Aims and Methods of Training. 2. Formation of a Class. 3. Introduction to Training. 4. Relaxation. Pelvic-Floor Stretching. Foot Exercises. 5. Abdominal and Costal Breathing. Pelvic-Floor Contractions. 6. Deep Abdominal Breathing and Back Rubbing. Panting Breathing. Pressure Symptoms. 7. Analgesia Revision. 8. Complete Rehearsal of Theory and Practice. 9. Postnatal Exercises. Care of Breasts. 10. Rehearsal of Labour. Revision of Theory. 11. Conclusion. Appendices. Index.

Since the pioneer work of Grantley Dick Reed the study of the training of the expectant mother has continued to develop; and the subject has now reached a stage when it forms an important branch of antenatal care.

Today the modern maternity hospital has its own 'mothers' club' where, in addition to being taught the rudiments of the physiology of labour and the art of relaxation, the mother-to-be is made familiar with the working of the hospital and with those who will later assist her with her labour.

This little textbook by Margery Chappell continues the development of this subject. While it is written primarily for the instructor, it will also be of undoubted value to the expectant mother who is unable to attend organized classes. In addition to detailed advice on relaxation, other aspects such as analgesia, postnatal procedure and exercises, and care of the breast are discussed.

The book is practical and has obviously been written by one of experience; it can be recommended to those who are interested in and concerned with this aspect of antenatal care.

V.B.

CORRESPONDENCE : BRIEWERUBRIEK

TREATMENT OF DIARRHOEA

To the Editor: May I add a humble word to the controversy that has arisen over Dr. Rousseau's article.[1]

I feel that here is an issue of conflicting opinions based on the fact that possibly the ideal treatment available in a hospital is so impracticable and impossible to those of us who have not the advantages of hospital facilities, unlimited expensive drugs and a laboratory to hand.

Dr. Rousseau has taken the trouble to write a well-reasoned article based on some years of very practical experience in the field. He is laughed at because of his lack of statistics. I think that to casually dismiss the issue with 'dat sy pasiënte òf baie vroeë gevalle van gastero-enteritis was, lig aangetas òf uitermate taai' is the height of impudence to a man who has had seven years of practice among the non-Europeans in a district like Paarl.

Like Dr. Rousseau I have consistently used castor oil in gastro-enteritis. However, like many others I am frightened to open my mouth for fear of the storm that may break about me when others more enlightened than I read my words.

There must be a great wealth of practical knowledge which never will be supported by statistics and which will never be published because of this. I venture to say this is a great loss to the profession and G.P.s should be encouraged to publish their opinions, as is done in *The Practitioner*. Criticism is necessary and all to the good, but it should take into account the vastly difficult conditions under which we all work, and more particularly, when it emanates from those from whom we learn, it should be reasoned and polite.

R. Fry

Orange Free State Goldfields
Water Supply Scheme
Bothaville
O.F.S.
12 January 1955

1. Rousseau, F. (1954): S. Afr. Med. J., **28**, 1038 (4 December).

TONSILS AND ADENOIDS

To the Editor: It is disturbing to note that the question of conservation of hearing and its relationship to adenoidectomy has been completely ignored, both in the editorial [1] and in the review of the literature by Dr. Rabkin,[2] published in the issue of 8 January 1955.

Usage and habit has made us associate tonsils and adenoids together, and too often they are regarded as synonymous terms.

The indications for the removal of adenoids differ widely from those of the tonsils, and should never be confused. I must disagree with Dr. Rabkin in his statement that recurrent attacks of otitis media are only probable indications for the removal of tonsils and adenoids. What can be the meaning of the term 'probable indication'?

I am of the opinion that repeated attacks of otitis media are an absolute indication for the removal of adenoids. Statistics show that 90% of the cases of deafness which exist in this country to-day could have been prevented by adequate treatment in the early stages of infective ear disease.

It is very unfortunate that such an article should have made no reference to this pressing and urgent problem. Deafness is the commonest disability which exists, and it is the responsibility of everybody to do all they can to reduce the incidence wherever possible.

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19 January 1955

1. Editorial (1955): S. Afr. Med. J., **29**, 29.
2. Rabkin, W. (1955): *Ibid.*, **29**, 31.

THE PAEDIATRIC APPROACH TO TONSILLECTOMY

To the Editor: Dr. Wolf Rabkin [1] arrays before us 'kaleidoscopic opinions' on tonsillectomy. When these are scrutinised one finds that this operation is approved of in certain cases.

Thirty years of paediatric practice have convinced me of its great beneficial effect. It is axiomatic that cases must be carefully selected. I cannot agree that 'removal of tonsils is *always* a gamble'. Thousands of children have been restored to health and strength by this surgical procedure. The results are spectacular in the puny child with recurrent sore throat, fever, offensive breath, poor appetite and adenoid facies, a mouth breather and a restless sleeper. Every general practitioner will bear testimony to this; as he treats the child at home constantly he is the best judge of the pros and cons of operation.

A tonsil should never be judged by its size. It can be big and harmless or small and poisonous. Here it apes our canine friend in that—what counts is not the *size of the dog* in the fight but the *size of the fight* in the dog! Children in poor health may have small, buried tonsils harbouring toxins, bacteria, dust and particles of coal and food, which are snugly sheltered in 30 or more crypts. These tonsillar crypts are *culs-de-sac* arranged like pleats in a dress and of one-way traffic. How could the tonsils possibly liquidate these destructive agents short of surgery? Herein lies the *fons et origo* of most 'pyrexias of unknown origin'.

At operation the tonsil, the whole tonsil, and nothing but the tonsil should be skilfully enucleated. This applies equally to the adenoids, which are hidden from the surgeon's view. It is a major operation requiring skill and experience and to be performed under ideal conditions. Incomplete or excessive removal of these tissues is a reproach to the surgeon's skill, does the patient more harm than good, and throws the operation into disrepute.

No doctor would urge tonsillectomy in the teeth of any epidemic. Unlike the acute appendix, it is dangerous to touch the throat when it is inflamed or angry. As regards poliomyelitis, it is noteworthy that leading American authorities have shown that fewer tonsillectomized children are attacked than those with tonsils intact.

I cannot accept the suggestion that a child needing tonsillectomy must wait until he is 6 or 7. If he can wait till 7 he can wait till 70! It should be done at 2 if it is strongly indicated. Age is no factor.

'We live in deeds, not years;
In thoughts, not breaths;
In feelings, not in figures on a dial.
We should count time by heart throbs.'

Morris Witkin
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17 January 1955

1. Rabkin, W. (1955): S. Afr. Med. J., **29**, 31 (8 January).

MEDICINE IN THE LAY PRESS

To the Editor: This letter is prompted by the abject nonsense which is printed only too frequently in the daily and weekly press. As many medical men are aware, the effect upon even the intelligent lay mind can be quite alarming.

A weekly paper with a wide circulation, in a prominent article, reports on the dangers of missing lunch. It reports a medical man in support of this article and in bold type, states that a meagre lunch can produce gastric ulcers and anaemia.

Where is proof to substantiate this extraordinary statement or, since the etiology of gastric ulcer is still undecided, is it a case of 'your guess is as good as mine'?

Medical men are aware of the half-truths and unsubstantiated material that is printed but the public, ignorant of medical matters, accept statements as proven facts and tend to behave accordingly.

Who, amongst us, has not been confronted by our patients with requests, often ridiculous, on the basis of press or magazine articles?

The public will continue to be needlessly alarmed or their hopes of 'miracle' drugs sadly undermined, unless and until all articles with a medical basis are submitted to a panel of doctors appointed by the Medical Association before publication.

If the General Public are to receive some form of superficial medical education, at least let it be accurate and guided.

M. I. Levin

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11 January 1955